L 016.655340571
L71

THE JOHN CRERAR LIBRARY
JUN 25 1957

LITHOGRAPHIC ABSTRACTS 1953

Monthly Lithographic Abstracts
September, 1952 through July, 1953

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.

#653

LITHOGRAPHIC ABSTRACTS 1953

Monthly Lithographic Abstracts
September, 1952 through July, 1953

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.
131 East 39th Street, New York 16, N. Y.

COPYRIGHT 1953 BY

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.

First Printing, September, 1953

LITHOGRAPHIC TECHNICAL FOUNDATION, Inc.

131 East 39th Street New York 16, N. Y.

TABLE OF CONTENTS

I. PHOTOGRAPHY

Photographic Equipment and Methods 5

Processing 7

Tone Reproduction 10

Halftone Photography . . . 10

Color — General 11

Color — Separation and Correction 12

II. PLANOGRAPHIC PROCESS

Platemaking:

General 17

Material and Methods . . 17

Chemistry 21

Metal Surfaces 21

Polymetallic 24

Graining 24

III. PAPER AND INK

Paper:

General 26

Coating 26

Troubles 27

Testing 29

Ink:

General 32

Testing 35

Drying 39

IV. LITHOGRAPHY — GENERAL

General 42

Plates and Graining . . . 43

Press: Cylinders, Blankets . . 45

Presses 45

V. GRAPHIC ARTS — GENERAL

General 48

Processes — General 49

Research and Development . 56

Testing and Measurement . . 56

Tone and Color 57

General Plates 58

LITHOGRAPHIC ABSTRACTS are published monthly in the trade press. Because of the exigencies of magazine publication, a complete set of abstracts cannot be had from one source. For this reason, and for the convenience of the lithographic industry, annual publication commenced with the 1947 issue. The months *September, 1952* through *July, 1953* are included in this issue. Plans are underway to publish Lithographic Abstracts prior to 1947.

Abstracts of important current articles, patents, and books are compiled by the Research Department of the Lithographic Technical Foundation, Inc. These abstracts represent statements made by the authors of articles abstracted and do not express the opinions of the abstractors or of the Research Department. Mimeographed lists have been prepared of (1) *Periodicals abstracted by the Department of Lithographic Research,* and (2) *Books of interest to lithographers.* Either list may be obtained for ten cents in coin or U.S. stamps. Address the Lithographic Technical Foundation, Inc., Research Dept., Glessner House, 1800 S. Prairie Ave., Chicago 16, Ill.

*HOW TO OBTAIN COPIES

Where titles are not marked with an asterisk, original articles can be furnished by the Foundation (address above) as photographic copies at sixty cents per page plus six cents postage for each four pages. PB reports can be secured from the Dept. of Commerce, Office of Technical Service, Washington, D.C., for prices quoted. Check or money order should be made payable to "Treasurer of the United States."

PHOTOGRAPHIC EQUIPMENT AND METHODS

* PHOTOPRINTING DEVICE. *U. S. Patent 2,600,168.* Battle H. Klyce. *Official Gazette* 659, No. 2, June 10, 1952, Page 531. 1. In a projection system, the combination of a member carrying a plurality of rows and columns of characters thereon backed by specular reflecting means, a source of light, means forming an optical path between said light source and said character bearing member for directing light in one direction from said source to a selected character and for transmitting an image of said character in the opposite direction thereover, said path forming means including a pair of reflector members, and means for adjusting the positions of said reflector members with respect to said character bearing member to direct light from said source to a character to be projected.

*STEP AND REPEAT FILM HOLDER. *U. S. Patent 2,601,804.* Edward Nineberg. *Official Gazette* 660, No. 1, July 1, 1952, Page 99. 1. A step and repeat camera mechanism including a film holder carriage, means for movably mounting the carriage, a gauge block, means for releasably securing the gauge block to the carriage at successive positions thereon, a fixed stop block supported to limit the movement of the gauge block in one direction, an adjustable stop block adjustably positioned to limit the movement of the gauge block in the opposite direction and microgauge means for setting the adjustable stop block, including a reference block, pin means for positioning the reference block for movements of integral units, microgauge means for indicating the spacing between the reference block and the adjustable stop block, and screw means for moving the adjustable stop block.

USE OF THE FLYING SPOT SCANNER TO STUDY PHOTOSENSITIVE SURFACES. J. I. Pantchechnikoff, S. Lasof, J. Kurshan and A. R. Moore. *Review of Scientific Instruments* 23, No. 9, September, 1952, pages 475-7 (3 pages). A flying-spot tube was used to scan a large-area germanium photocell with a minute light spot. The output of the cell was amplified by a wide-band amplifier which controlled the intensity of a kinescope driven in synchronism with the flying-spot scanner. The display on the kinescope is a map of the photosensitivity at the surface of the photocell. A similar technique was also used to measure the frequency response of the photocell.

A PRECISION COLOR TEMPERATURE-METER FOR TUNGSTEN ILLUMINATION. G. H. Dawson, D. E. Grant and H. F. Ott. *Journal of the Society of Motion Picture and Television Engineers* 59, No. 4, October, 1952, pages 309-12 (4 pages). A precision color temperature meter utilizing red and blue filters is described. A special logarithmic diaphragm largely eliminates undesirable effects of non-uniform response over the cell area and aids accurate setting of the red filter standard at high intensities.

* INSPECTION DEVICE FOR DETERMINING HEIGHT OF DOTS ON ENGRAVED PLATES. *U.S. Patent 2,619,004.* Brian O'Brien, Jr. and Clarence M. Flint. *Official Gazette* 664, No. 4, November 25, 1952, page 1099. An instrument for determining the height of highlight dots on photo-engraved plates comprising an elongated casing including a plane bottom surface and a top member spaced therefrom, having a substantially low center of gravity, a magnifying optical system carried by the top member, said bottom surface being provided with an aperture in the field of said optical system, means for producing shadows of the highlight dots the length of which are determinative of the height of the dots, said means including a source of illumination housed in the elongated casing, and a lens for projecting a beam of collimated light therefrom into said aperture and against the sides of the highlight dots of the

plate to be inspected at an angle of about 31 degrees, 15 minutes, to the axis of the magnifying optical system.

* FLASHING LAMP FOR HALFTONE CAMERAS. *U.S. Patent 2,621,569.* Courtney Q. Glassey. *Official Gazette*, 665, No. 3, December 16, 1952, pages 775-6. 1. A flashing attachment for use on a halftone camera having an optically corrected lens and comprising, in combination, a lens hood mounted on and extending forwardly of said lens, a field lens carried by said hood and physically positionable on the axis of the camera lens and adjacent the latter, a light source mounted on said hood and positioned to illuminate said field lens so that the latter will form an image of said source on the axis of and within said lens, means to move said field lens to and from the field of said camera lens, and an adaptor for connecting said hood to said camera lens to position said field lens and said light source in a definite spaced relation to said camera lens.

* APPARATUS AND METHOD FOR EVALUATION OF PHOTOGRAPHIC RESOLVING POWER. *U.S. Patent 2,625,072.* Lauriston E. Clark and Donald H. Kelly. *Official Gazette* 666, No. 2, January 13, 1953, pages 433-434. 1. Apparatus for determining the resolving power of a photographic recording medium comprising a photograph of an optical target having a plurality of alternately contrasting equiangular sectors disposed in a circle, a support for said photograph, an optical system for projecting an image of the photographed target, a light-sensitive element in the region of the plane of the image for producing alternating current in response to light variations, means for producing relative radial movement between the element and the center of the image, means for producing relative rotation between the support and the element about an axis through said center, the element being responsive to alternately contrasting light values projected thereon to produce an alternating current of constant predetermined frequency, discriminating means passing said predetermined frequency only, and means for detecting changes in the amplitude of the constant frequency current whereby substantial change in said amplitude, as the element is moved radially, indicates the limit of resolving power of the medium.

* CAMERA LENS BOARD AND MEANS FOR CONTROLLING THE SAME. *U. S. Patent 2,625,851.* Herbert Gelb. *Official Gazette* 666, No. 3, January 20, 1953, page 715. 1. A lens board; a lens mounted thereon; a flashlight; a bellcrank pivotally mounted on said lens board and having said flashlight mounted on one leg of said bellcrank, said bellcrank being so mounted that oscillation thereof on its pivotal axis moves said flashlight into and out of register with said lens; a shaft journaled on said lens board; an eccentric rotatably effecting oscillation of said bellcrank; a motor for rotating said eccentric; a switch for stopping said motor; a cam mounted on said shaft for actuating said switch once each half revolution of said shaft; and another switch for turning said flashlight off and on, said last named switch being actuated by said other leg of said bellcrank.

LIGHT MEASURING DEVICES — THEIR USE IN LITHOGRAPHY. Harvey T. Holsapple. *National Lithographer* 60, No. 1, January, 1953, pages 30-1 (2 pages). A brief discussion of the application of optical density and the use of density measuring instruments, densitometers in lithographic plants.

MODI KOPY—DISTINCTIVE TYPE ILLUSTRATIONS. J. S. Mertle. *National Lithographer* 60, No. 1, January, 1953, pages 32-3 (2 pages). A brief, non-technical description of the ModiKopy process and camera. The purpose of the process is to provide a large range of special effects from a given original such as increasing the height without changing the width, etc.

THE NEW EXPOSURE REGULATOR "UNILIGHT" FOR COPYING AND REPRODUCTION. Karl Engeler. *Fachhefte* 5, 1952, pages 193-201 (9 pages) (in German). Uniform illumination of copy in a printing frame with a single-arc lamp is obtained by rotating a glass disc, that carries an opaque segment, between the arc and the frame. The shape of the segment is calculated from (1) the arc distance, (2) reflections from the interviewing glass elements, (3) and absorptions of the glass elements. It is claimed that this gives uniform exposure over the entire area of the plate.

DISCOVERY IN DISTORTION. Tom Blair. *Graphic Arts Monthly* 25, No. 3, March, 1953, pages 90, 92, 94, and 110 (4 pages). The Robertson Distortion Camera is a copying device that can change one dimension of an original without changing the other. The camera can achieve many unique effects by means of tilts and swings of the lensboard, copyboard and camera back.

PROCESSING

* PERMANENT PRINTS. J. Graf. *Fotografie* 1950, pages 338, 340, 345-6; 1951, pages 11-12, 15, 18, 41-4, 47, and 49. A novel, pigmented, chromated, fish-glue transfer process is disclosed for making high-quality, permanent photographic prints. *Chemical Abstracts* 47, 3, February 10, 1953, Column 987. Fotografie is published at Verlag Wilhelm Knapp, Mühlweg 19, Halle/Salle, Germany.

* PHOTOGRAPHIC IMAGES ON OXIDIZED ALUMINUM. N. I. Kirillov and A. S. Kheinman. *Zhurnal prykladnoi Khimii S.S.S.R.* (J. Appl. Chem. U.S.S.R.), 24: 1019-25, October, 1951; *Metal Ind.* 80: 31, Jan. 11, 1952. Thin films of oxidized aluminum are formed on the surface of pure aluminum sheets. Oxidation of the aluminum in different electrolytes yields oxidized layers of various types and thicknesses. If silver halide is used for sensitizing the oxidized layers on aluminum, a stable silver image may be obtained. Silver bromide is precipitated in the porous oxide layer by bathing in separate, successive solutions of potassium bromide and silver nitrate. The sensitized plates are exposed to a mercury quartz lamp, and best results were obtained when the plates were bleached in a potassium ferricyanide solution, and washed and dried before exposure and development. The color of the developed image depends on the size of the silver particles in the image. Various developers, both chemical and physical, were investigated; Amidol was found to give the greatest speed of development. The layer of aluminum oxide can be sensitized also with diazo compounds, and development is accomplished by the conventional method of ammonia fuming. The diazo dyes formed in this process combine readily with the oxide film to form stable images which are not easily washed away. *Monthly Abstract Bulletin* 38, No. 6, June, 1952, page 284. Metal Industry is published by Metal Industry Publishing Company, 99 John Street, New York, New York.

SPECTRAL SENSITIVITY OF DICHROMATED ALBUMIN. Richard W. Koch, Donald J. Byers and Robert E. Rossell. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 105-119 (15 pages). Equipment and procedures for a new method of measuring the extent of tanning will be described. The method is based on the change in optical transmission of the albumin film as tanning takes place. Data presented show the effect of pH on the spectral sensitivity. Copies of the current Proceedings may be obtained from the Secretary, Dr. Paul Hartsuch, 334 S. Kensington Avenue, LaGrange, Illinois for five dollars.

* SENSITISING LIGHT-SENSITIVE COATINGS. M. A. Gorodnitzky. *Poligraf. Proiz.* (in Russian); *Papier u. Druck, Druck u. Reproduktion* 1, 1, July, 1952, pages 6-7 (in German). The

influence of the following sensitizers on the speed of light-sensitive coatings was investigated at the Leningrad Cartographic Laboratory: Rosin-silver (200%), erythrosin-silver (200%), copper chloride (25%), silver halides (20%), and mercury vapours (1,200-1,600%). The figures in brackets indicate the increases in sensitivity produced in dichromated albumen. The sensitivity of dichromated gelatine was increased 12 times by mercury vapours. The toxic effects of mercury vapours could be overcome by the use of a special cupboard for the process. *Printing Abstracts* 7, No. 12, December, 1952, page 603.

* REVERSAL IMAGES: DIFFUSION IN SOLUTION BATHS. *British Patent 665,984.* Gevaert Photo Producten N.V. *Photographic Abstracts* 1952, Part 3, page 143. In an improved form of the process for the production of reversal images by diffusion of undeveloped silver halide from an exposed and developed emulsion layer into a hardened receiving layer, the emulsion layer is removed after diffusion without the use of warm water. After development of the exposed emulsion layer the material is treated in a bath which contains gelation-inhibiting agents rendering the gelatin soluble at room temperature, and silver halide solvents. By removal of the emulsion the diffusion is more uniform and the diffusion time can be varied as desired. In one form the gelatin is softened only, so that it can be removed in cold water. Suitable diffusion solution baths contain thiocyanates, such as potassium thiocyanate, or an organic sulphonic acid or sulphonate, and sodium thiosulphate. British patents can be obtained from The Patent Office, 25 Southampton Buildings, London, W. C. 2, England, for approximately forty cents.

*DIRECT POSITIVE PHOTOGRAPHIC PROCESS. *U. S. Patent 2,607,684.* Chester J. Nowak and Ralph S. Colt. *Official Gazette* 661, No. 3, August 19, 1952, page 804. 1. The method of making a direct-positive photographic relief image in a photographic element having a support substantially impermeable to photographic developing solution carrying a fogged substantially unhardened gelatino-silver halide emulsion stratum and an unexposed substantially unhardened gelatino-silver halide emulsion stratum over said fogged stratum, which comprises image-wise exposing said unexposed emulsion leaving a stratum of unexposed soluble emulsion separating the fogged stratum and the image-wise exposed stratum, developing the exposed element in a tanning developer composition to simultaneously form a positive silver and tanned gelatin image adjacent the support, a negative silver and tanned gelatin image in the region of the image exposure, and a stratum of soluble emulsion separating said tanned images, thereafter removing said tanned negative image and soluble emulsion by treatment with hot water leaving a positive relief image on said support.

* HIGH CONTRAST DEVELOPERS. *U. S. Patent 2,599,518.* Morton Schwarcz. *Chemical Abstracts* 46, No. 17, September 10, 1952, Column 7919. A high-contrast hydroquinone developer of improved working life is obtained by replacing the CH_2O-releasing compd. used in prior art formulations with a (hydroxymethyl) hydantoin, e.g. 5,5-dimethyl (hydroxymethyl) hydantoin.

* PHOTOGRAPHIC MULTILAYER STRIPPING FILM. *U.S. Patent 2,609,291.* Jack H. Coote and Wm. H. Oathercole. *Official Gazette* 662, No. 1, September 2, 1952, page 229. 1. A multi-layer stripping film comprising a support carrying upon one side thereof at least two silver halide emulsion layers sensitive to different parts of the spectrum said layers being separated by a layer comprising a transparent, flexible, water-insoluble, hydrophobe copolymer of vinyl chloride and vinyl acetate and containing at least 85% of vinyl chloride, the silver halide

emulsion layer underlying said copolymer layer adhering directly to said copolymer layer and the silver halide emulsion layer overlying said copolymer layer being attached hereto by a hardened gelatine layer.

REVERSAL PROCESSES. R. I. Jackden. *Modern Lithographer and Offset Printer* 48, No. 9, September, 1952, page 204. A brief description of methods of reversal not requiring photographic darkrooms. In general, a greasy ink transfer is pulled from the form, and the transfer sheet then coated with thin varnish. Turpentine is next applied which penetrates the varnish and dissolves the ink image below. After a simple etch the reverse can be rolled up and transfers taken.

* PHOTOGRAPHIC STRIPPING FILM. *U.S. Patent 2,614,932.* Gales F. Nadeau, Clemens B. Starck and Carl F. Smith. *Official Gazette* 633, No. 3, October 21, 1952, page 837. 1. A photographic stripping film comprising a surface hydrolyzed cellulose triacetate temporary support, a cellulose acetate butyrate permanent support releasably attached to the hydrolyzed surface of said temporary support by means of a water-soluble cellulose acetate layer, and a photographic emulsion layer permanently attached to said permanent support.

GELATINO SILVER EMULSIONS. Part Two. J. S. Mertle. *National Lithographer* 59, No. 10, October, 1952, pages 40-1 and 125-7 (5 pages). The second in a series of articles on the history of gelatino-silver emulsions. The early work with collodion and gelatin as the vehicle for the silver salts is discussed.

* SENSITIVE PHOTOGRAPHIC ELEMENTS FOR LITHOGRAPHY. *British Patent 678,322* (C.f. *U. S. Patent 2,596,713*). Gale F. Nadeau and Clemens B. Starek. *Tin Printer and Box Maker* 29, No. 337, February, 1953, page 14. The element comprises a laminated cellulose ester sheet, an anti-halation stratum contiguous to the lamination interface, and on one of the outer surfaces of the laminated sheet a stratum of light-sensitised hydrolysed cellulose ester. British patents may be obtained from The Patent Office, 25 Southampton Buildings, London, W. C. 2, England, for approximately forty cents.

* AFTER TREATMENT OF OXIDISED LAYERS ON ALUMINIUM. *German Patent 821,908.* Heinrich Neunzig. *Tin Printer and Box Maker* 29, No. 337, February, 1953, page 15. The articles are treated with an aqueous solution which contains hydrofluoric acid, an oxidising acid, preferably chromic acid, in combination with a base, preferably ammonium (2 pp.). Copies of German patents may be obtained from Museumsinsel 1, München 26, for 2 Westmarks; mark the order "Girokonto bei der Landeszentralbank München Nr. 6/154", or as a photoprint from the U. S. Patent Office, Washington 25, D. C.

REPRODUCING FROM THE NEW WHITE BROMIDE PAPERS. *Modern Lithographer and Offset Printer* 49, No. 4, April, 1953, pages 18-19 (2 pages). Several photographic papers now contain fluorescent dyes to make them appear brighter. When using such prints for photomechanical reproduction on color-blind film, they require more exposure due to the fact that the fluorescent dye converts some blue light to longer wavelengths to which the color-blind emulsion is not sensitive.

* ANTISTATIC PHOTOGRAPHIC FILM. *U.S. Patent 2,639,234.* D. R. Morey and W. R. White. *Official Gazette* 670, No. 3, May 19, 1953, page 838. 1. An anti-static photographic film comprising a cellulose ester support having thereon a sensitive silver halide emulsion layer and in one of the layers of the film a mixture of (1) a surface-

active ionic conductor material selected from the class consisting of salts of sulfonated naphthalene formaldehyde condensates selected from the group consisting of alkali metal and amine salts, alkali metal alkyl phosphates, and cellulose sulfates in which one valence of the sulfate is satisfied by a radical selected from the group consisting of alkali metal, ammonium and amine, and (2) a surface-active spreading agent selected from the class consisting of esters of polyhydric alcohols with higher fatty acids, alkyl aryl sulfonates, sodium salts of fatty alcohol sulfates, sodium salts of sulfated higher fatty esters, mixed fatty acid alkylolamine condensates, and alkyl-ated aryl polyether alcohols, said surface-active conductor comprising from about 30% to about 95% of said mixture.

TONE REPRODUCTION

STUDIES IN THE RESOLVING POWER OF PHOTOGRAPHIC EMULSIONS. V. THE EFFECT OF REDUCTION AND INTENSIFICATION (Communication No. 1482, Kodak Research Laboratories). Fred H. Perrin and J. H. Altman. *Journal of the Optical Society of America* 42, No. 7, July, 1952, pages 462-7 (6 pages). The effects of six common reducers and four common intensifiers have been studied on a high contrast positive emulsion, a fine-grained panchromatic negative emulsion, and a high speed negative emulsion. It was found that reducers generally injure resolution, cutting reducers most of all, although the simple persulfate reducer improves resolution at low densities. Intensifiers vary according to no general rule, and some have little effect on resolution. Most of them are somewhat deleterious at low and medium densities, the silver intensifier being least so, but all improve resolution at high densities. No evidence was found for Scheffer's statement that a rinse in Farmer's reducer will dissolve the resolved portion of the image without much affecting its density.

ON THE FLARE OF LENSES. Goro Kuwabara. *Journal of the Optical Society of America* 43, No. 1, January, 1953, pages 53-7 (5 pages). The flare or the stray light in optical systems reduces the image contrast in photography and causes serious errors in photometry. The amount of the flare for small luminous objects was measured by an improved photographic photometry. Generally, the flare originates in two ways, that is, reflections at air-glass interfaces and scatterings by dusts or scratches on glass surfaces. The flare by reflection increases with the area of the illuminated object and attains a saturated value for a large field angle: on the other hand, the flare by scattering slightly depends upon the area. When plotted *versus* the area or the square of the subtended angle of the target, the amounts of the flare lie on a straight line with several kink points, and the flare by scattering can be determined by extrapolating this line to zero field angle. For a small luminous target, the effect of the flare by reflection is less at a higher relative aperture than at a lower, and the anti-reflection coating greatly reduces the reflected light but slightly enhances the scattered light.

HALFTONE PHOTOGRAPHY

HALFTONES IN OFFSET LITHOGRAPHY. Campbell Sabiston. *Canadian Printer and Publisher* 61, No. 6, June, 1952, Pages 38-9 and 50 (3 pages). The author suggests that the frequency of unsatisfactory halftone reproductions can be reduced by proper selection of photographic paper for the original negative. He outlines a proposed procedure to be followed to minimize this type of error.

CHEMICAL REVERSAL CAN SAVE TIME AND PLATE MATERIAL. J. Poulton. *British and Colonial Printer* 151, No. 4, July 25, 1952, pages 86 and 100 (2 pages). Instructions for chemical reversal of halftone images by bleaching and redevelopment are given. The plates used are made in England.

THE THEORY OF THE HALFTONE SCREEN. Walter J. C. Hislop. *Process Engravers Monthly* 59, Nos. 704 and 705 (August and September, 1952), pages 230 and 233-4; pages 261-2 (5 pages). The author reviews the recent paper of V. W. G. Harrison on the theory of halftone screens (published in the May-June issue of *Photographic Journal*, Section B, pages 74-91—c.f. Lithographic Abstracts, July, 1952). He takes issue on two main points of criticism by Harrison: the pinhole theory on the ground of phase differences and the relationship of the dot shape to the lens-stop.

CONTACT NEGATIVES. A. G. Arend. *Modern Lithographer and Offset Printer* 48, No. 11, November, 1952, pages 255-6 (2 pages). The advantages of using contact negatives in place of direct screen negatives in platemaking is discussed. One of the main advantages is the greater latitude in exposure of a contact dot as compared to a "soft" direct screen dot.

LETTER TO THE EDITOR: "THE THEORY OF THE HALFTONE SCREEN" FROM DR. V. G. W. HARRISON. *Process Engravers Monthly* 59, No. 707, November, 1952, pages 330, 333 and 340 (3 pages). Dr. V. G. W. Harrison comments on a review by W. J. C. Hislop of his paper on "The Theory of the Halftone Screen". He expands on several points criticized by the latter, and claims that halftone dots calculated by his theory correspond much more closely than is given by the penumbral theory and somewhat more closely than is given by Yule's treatment.

W. J. C. HISLOP REPLIES TO DR. V. G. W. HARRISON (LETTER TO THE EDITOR). *Process Engravers Monthly* 59, No. 708, December, 1952, pages 361-2 (2 pages). In reply to Dr. Harrison's letter in the November, 1952, issue, W. J. C. Hislop continues their discussion of Dr. Harrison's paper on the theory of the halftone screen. Hislop describes an experiment which demonstrated that the shape of the wavefront can be ignored for all practical purposes.

COLOR — GENERAL

• METHOD OF INCORPORATING LETTERING IN PRINTED COLOR REPRODUCTIONS. *U. S. Patent 2,605,181.* Harold E. Alexander and Charles F. Cook. *Official Gazette* 660, No. 5, July 29, 1952, page 1332. A method of incorporating lettering of any desired color in printed color reproduction prepared from a multi-colored positive planar primary subject, which method comprises the steps of preparing a planar secondary subject comprising a transparency of said lettering in an opaque background, arranging the planar primary and lettering subjects on the same side of a focusing screen in planes parallel to the plane of said screen with said subjects mutually spaced to not overlap each other, projecting from each of said subjects images maintained in parallel planar relation but travelling along mutually converging axes, the light forming the lettering projection passed through at least one color filter in the path of the light rays between the light source and the plane of the focusing screen to produce the desired color therefor, bringing the so projected images into focus on said screen in at least partially overlapping relation to form a composite image of the primary subject and lettering at the plane of said screen, producing a set of color separation negatives of the composite primary and lettering images on light sensitive elements substituted for said screen, and preparing color printing plates from said composite color separation negatives.

HOW TO PREPARE ART FOR ONE APPROACH TO R.O.P. COLOR. Homer L. Green. *Photo-Engravers Bulletin* 42, No. 4, November, 1952, pages 239-254 (16 pages). A description of the preparation of separation art (individual drawings for each color) for R.O.P. Color.

COLOR — SEPARATION AND CORRECTION

PROGRESS IN COLOUR CORRECTION BY MASKING TECHNIQUES. R. R. Robinson. *Photographic Journal* 92B, No. 2, March-April, 1952, pages 52-59 (8 pages). The author reviews the more recent masking developments that have occurred in the last ten years. The development and progress are followed first by the inventions which have been patented and second by an examination of their applications in practice.

*COLOR CORRECTION IN A PHOTOELECTRIC SCANNING MACHINE. *U. S. Patent 2,567,240.* B. L. Sites. *Monthly Abstract Bulletin* 38, No. 4, April, 1952, Page 206. In a photoelectric scanning machine, color correction is affected by splitting the light from the original into a number of wavelength bands by means of a prism or filters, picking these up with photocells, reversing the polarity of some of the resulting signals, multiplying the signals by various factors, adding them together, and exposing a negative with light controlled by the sum of the modified signals. This is the electronic equivalent of subtracting exposures made through different filters, which cannot be conveniently done photographically. Charts and methods of calculation are included to show that the desired color separation may be obtained by adjustment of the various multiplying factors.

*PHOTOGRAPHIC COLOR CORRECTION PROCESS. *U. S. Patent 2,600,756.* Donald C. Gresham. *Official Gazette* 659, No. 3, June 17, 1952, Page 776. 1. The method of making a colour corrected three colour photographic print by means of three dyed colour separation reliefs whose dye images are superimposed to give the desired print at least one of which dye images has both wanted and unwanted spectral absorption wherein correction for unwanted absorption of a colour by dye having wanted and unwanted absorption in one of the colour separation reliefs is obtained by removing dye from the dyed relief which records the colour which is unwantedly absorbed by bringing it into contact and in register with an undyed relief image of the areas of the said unwanted absorption, and then combining the corrected relief thus obtained, with the remainder of said three-color separation reliefs to produce a color picture.

ART AND RETOUCHING PRACTICES IN LEADING LITHOGRAPHIC PLANTS. *Lithographers Journal* 37, No. 5, August, 1952, pages 12-13 and 45 (3 pages). Part of a report by a team of touring British lithographers. Discussed are the art and retouching departments in U.S. plants.

*PROCESS OF PRODUCING MULTILAYER COLOR NEGATIVES CONTAINING MASKING IMAGES FOR COLOR CORRECTION PURPOSES. *U. S. Patent 2,607,681.* Harold C. Harsh and Joseph S. Friedman. *Official Gazette* 661, No. 3, August 19, 1952, page 803. 1. In the production of subtractively colored negatives with correction printing masks, integrally bound therein, for multilayer film having silver halide emulsions containing color formers and being respectively sensitized to the blue, green, and red regions of the spectrum, by exposing said multilayer film to a colored object and color developing the same, the improvement which comprises selectively fixing the residual silver halides in the blue sensitive layer, converting the residual light sensitive silver halides in the other emulsion layers into light insensitive silver salts selected from the group consisting of silver iodide and silver sulfide, and removing all metallic silver.

SUBTRACTIVE COLOR REPRODUCTION: INTERIMAGE EFFECTS (Communication No. 1491 from Kodak Research Laboratories). W. T. Hanson,

Jr. and C. A. Horton. *Journal of the Optical Society of America* 42, No. 9, September, 1952, pages 663-669 (7 pages). A number of theoretical treatments of the problem of three color subtractive photographic reproduction has led to equations which express the required relationship between the amounts of the three dyes occurring in the reproduction and the red-, green-, and blue-exposure densities of the subject photographed. "Exposure densities" were defined by Brewer, Hanson, and Horton, as the densities of a particular object being photographed, measured with respect to the sensitivity distributions of the photographic process. Each dye must be a function of all three exposure densities. Subtractive color photographic processes, in which no masking is used, are frequently assumed to produce a cyan-dye image as a function of red-exposure density, a magenta image as a function of green-exposure density, and a yellow image as a function of blue-exposure density. However, many processes have "interimage effects" which cause each dye image to be a function of all three exposure densities. Some of the interimage effects occurring in Kodak Ektachrome Sheet Film have been determined. The sensitometric characteristics of the film, including the interimage effects, have been expressed in the form of equations similar to the theoretical color reproduction equations. A comparison of these two sets of equations indicates that most of the interimage effects occurring should give an improvement in color reproduction over that which would be obtained in their absence.

* METHOD FOR COLOR SEPARATION. *U.S. Patent 2,614,042.* W. C. Huebner. *Official Gazette* 663, No. 2, October 14, 1952, page 515. 1. In the art of producing a color separation negative of a color copy; focusing a copying camera on the color copy with the field of view of the objective lens of the camera including the entire surface of the copy, excluding extraneous light from the copy, then passing from a light source white light through a prism with said light source and said prism at least equal in length to one dimension of the copy, then masking the spectrum produced to form a band of light of a single predetermined color of substantially uniform density throughout and coextensive in length with one dimension of the copy but fractional in width compared to the other dimension thereof, projecting upon an extremity of the unlighted copy said band of light which uniformly illuminates only a zone of the copy corresponding to the area of the band, then moving the band of light while always entirely within the field of view of the camera lens in the direction of its width and of the other dimension of the copy and with its origin at a constant distance from the copy until the moving band of light has scanned the entire copy and has uniformly illuminated successive zones thereof each corresponding to the band area with said successive zones aggregating the entire surface of the copy, and simultaneously and continuously with the scanning of the copy by the band of light exposing a photo-sensitive element in the camera through the lens of the latter to the successively and uniformly illuminated zones of the copy which are each always entirely in the field of view of the lens whereby a single predetermined color separation negative of the copy is produced.

THEORY OF MASKING FOR COLOR CORRECTION. I. MASKS DRAWN FROM THE SUBJECT. Hans E. J. Neugebauer. *Journal of the Optical Society of America* 42, No. 10, October, 1952, pages 740-7 (8 pages). A method for color correction is considered using two masks drawn from the subject and used for correcting the color separation negatives. The formulas for computing the exposure times and the graduations are in agreement with practical results, as far as letterpress, offset, and gravure printing are concerned. The exposure

times of the masks and the red separation have to be carefully watched. The method allows accurate reproduction of the eight main colors, white, yellow, magenta, cyan, violet, green, orange and black, and of a medium gray. The colors lying between them are reproduced with an approximation that is sufficient for many practical applications. The rule that the three color separations have to be developed to the same gamma does not always allow a correct reproduction of gray. The reproduction of grays can be considerably improved by making use of nonlinear characteristic curves. This is valid for letterpress, offset, and gravure printing as well as for reproduction methods based on subtractive mixture.

INTRODUCING THE MULTICHROM COLOUR MASKING CAMERA. H. A. Lewindon. *Photo-Engravers Bulletin* 42, No. 4, November, 1952, pages 131-33 (3 pages). The Multichrom camera uses the principle of projection masking developed in the middle thirties by M. Nerot of France. Further development resulted in the present camera which resembles two cameras in one; the negatives are made at one end and projected back to the camera at the other end and a positive or negative mask is made. The original can be either a color transparency or flat copy.

TIME-LIFE ELECTRONIC COLOR SCANNER—A PROGRESS REPORT. Charles C. Barkley. *Photo-Engravers Bulletin* 42, No. 4, November, 1952, pages 145-48 (4 pages). A brief report on the present status of the Springdale Electronic Color Correction Scanner. The original model has been greatly improved and the new model is now being tested at their laboratories.

ALL ELECTRONIC COLOR CORRECTION—A PROGRESS REPORT. John S. Odell. *Photo-Engravers Bulletin* 42, No. 4, November, 1952, pages 149-54 (6 pages). A brief description of the operation of the Interchemical Corporation's color correction device now being developed by RCA. Commercial models of the machine are expected in the latter part of 1953.

COLOR PROOFS OF CONTINUOUS TONE SEPARATION NEGATIVES. T. F. Macknik. *Photoengravers' Bulletin* 42, No. 5, December, 1952, pages 39-41 (3 pages). A process of preparing dye-coupled images on process strip film from each separation negative and viewing them in register to check color balance.

MASKING AND THE GRESHAM-McCORQUODALE PROCESS. Melvin Gevert. *Lithographers' Journal* 37, No. 10, January, 1953, pages 10-11 and 49 (3 pages). This article is based on a demonstration of the Gresham-McCorquodale Process and on the author's opinion as to its suitability for use in lithographic plants.

* PROCESS OF PREPARING TRICOLOR SEPARATIONS. *U. S. Patent 2,628,901.* Herman H. Duerr. *Official Gazette* 667, No. 3, February 17, 1953, page 714. 1. In the process of preparing tricolor separations from an exposed multilayer color film comprising a support bearing superimposed silver halide emulsion layers and being sensitized respectively to the blue, green, and red regions of the spectrum, the blue sensitive layer being outermost and being devoid of color former, and the green and red sensitive layers each containing a color former fast to diffusion and capable of reacting with the oxidation products of an aromatic primary amino developing agent to yield a dye-stuff image, the improvement which comprises contacting the outermost layer of said film with an auxiliary film comprising an impermeable support bearing a colloidal layer containing a member selected from the group consisting of an alkali sulfide, stannous chloride, col-

loidal silver, colloidal silver sulfide and colloidal gold sulfide, while forcing the colloidal layer of said auxiliary film firmly against the surface of the blue sensitive layer of the multilayer film in the presence of a developer-fixer solution for a sufficient length of time to cause the developer-fixer solution to develop the negative image in said blue sensitive layer, to dissolve the residual silver halide of said layer and transfer it to the colloidal layer of the auxiliary film and effect reduction of said residual silver halide in said colloidal layer, stripping off and washing the auxiliary film containing the blue record, processing the multilayer film by color forming development with said aromatic primary amino developing agents, bleaching and fixing it to a negative containing the red and green records respectively, and printing said records onto separate sensitized film with sharp cutting filters.

* MULTICOLOR NEGATIVE FILM WITH INTEGRAL MASKING IMAGES. *U. S. Patent* 2,629,657. H. H. Duerr, H. W. Morreall, Jr. and H. C. Harsh. *Official Gazette* 667, No. 4, February 24, 1953, pages 1003-1004. Subtractively colored multilayer transparent negatives suitable for printing comprising a base and three layers superimposed thereon, said layers containing in the innermost layer transparent cyan negative images, in the next adjacent layer transparent magenta negative images and in the outermost layer transparent yellow negative images and containing in the cyan layer red azo dye positive images of low color density and in the magenta layer yellow azo dye positive images of low color density.

THE CASE FOR COLOUR MASKING. Frank H. Smith. *The Process Journal* No. 4, Winter, 1953, pages 16-18 (3 pages, one of which is an illustration). At Bolt Court the advanced photo-engraving negative making class prepared a set of masked and unmasked separations of a piece of linoleum. Two illustrations show the differences in color reproduction from the two sets of negatives.

THE POLOR-X MASKING METHOD. Henry R. Long. *National Lithographer* 60, No. 3, March, 1953, pages 32-34 (3 pages). A brief discussion of Stephen's masking method and his photographic plate. The new plate is claimed to have a long density range with minimum crowding of the highlights.

HOW TO COLOR PROVE FROM NEGATIVES. *Lithographers Journal* 38, 1, April, 1953, pages 14-15 and 61 (3 pages). A description of the Chromeline process of color proving negatives. The method is similar to that for Blue lines except that the Chromeline coatings are colloidal suspensions of litho ink pigments in a light-sensitive vehicle.

* PROCESS OF PRODUCING MULTILAYER COLOR NEGATIVES CONTAINING MASKING IMAGES FOR COLOR CORRECTION PURPOSES. *U.S. Patent* 2,635,959. H. C. Harsh and J. S. Friedman *Official Gazette* 669, No. 3, April 21, 1953, pages 867-868 (2 pages). 1. In the production of subtractively colored positives with correction printing masks, integrally bound therein, for multilayer film having silver halide emulsion layers being respectively sensitized to the blue, green, and red regions of the spectrum and arranged so that the blue sensitive layer is the top layer with a yellow colloidal silver filter layer between the top blue layer and middle green layer, said sensitized layers containing color formers capable of producing dye images complementary in color to the one for which the layer is sensitized, by exposing the said multilayer film to a colored object and color developing the same, the improvement which comprises developing all layers of the said color developed film by a single development in a developer incapable of coupling with the color former in the layers for a time sufficient to bring the development to gamma infinity, selectively fixing the residual silver halides in the blue sensitive layer, bleaching the metallic silver in all layers

including the filter layer to silver chloride at the same time so as to destroy the green and red sensitivities of the middle and lower layers, removing the silver chloride thus formed, exposing the residual silver halides in the green and red sensitive layers to white light, and developing the thus exposed silver halides in a black and white developer and removing the residual silver halides by fixing.

MAGENTA MASKING. G. R. Brunhouse. *National Lithographer* 60, No. 5, May, 1953, pages 36-38 (3 pages). The author recommends the use of magenta masking even if it has been tried and discarded in the past. Several new developments and changes in techniques are discussed which have improved the process.

HENRY APPRAISES PHOTOTYPESETTING. Thos. P. Henry. *Printing Equipment Engineer* 82, No. 11, August, 1952, pages 44-7 (4 pages). The author reviews the experience of twenty months' work with an Intertype Fotosetter in his plant, briefly reviewing the principles of this and other photo-typesetters. He expresses the opinion that this type of machine will not completely replace metal type but may someday account for 10 to 15% of composition work.

MONOPHOTO PHOTOTYPESETTING MACHINE. *Printing Equipment Engineer* 83, No. 2, November, 1952, pages 32-3 (2 pages). A brief description of the Monophoto Phototypesetting Machine which was developed by the Monotype Corp. of England and which will be handled by the Lanston Monotype Machine Co. in the Western hemisphere. In the Monophoto system, existing standard keyboards already in operation may be employed for producing the perforated paper ribbon. A diagram of the general arrangement of the machine is shown.

• APPARATUS FOR PHOTOGRAPHICALLY COMPOSING TEXT MATTER. *U.S. Patent 2,616,330.* George Westover. *Official Gazette* 664, No. 1, November 4, 1952, page 135. 1. Apparatus for photographically composing a page form from at least two films perforated for feeding in known manner and each bearing character images arranged in justified lines or groups of lines in turn from the several films, the apparatus including an indexing head, at least two film feeding devices distributed around said head, each of said devices including at least one feed sprocket associated with a driven coupling member and mountings for a take-up spool and a trailing spool, an optical system defining a projection station and an exposure station and including exposing means for projecting an image of a line of characters from said projection station to said exposure station, a viewing station at one portion of said head, feed-clutch means at said viewing station for positioning a film showing thereat, control means operable for angularly displacing said indexing head so as to bring any of said films into said projection station and another of said films at the same time into said viewing station, a photo-sensitive page carrier, feeding means for advancing said page carrier past said exposure station, a first driving coupling member positioned to engage the driven coupling member of any of said devices when in said projection station, a power driven member associated with step-by-step driving means operatively connected with said driving coupling member and said page-carrier feeding means, and a second driving coupling member operable at will and positioned to engage the driven coupling member of any of said devices when in said viewing station.

PLATEMAKING — GENERAL

STOPPING OUT WORK FOR DEEP ETCH OFFSET PLATES. Charles F. King. *Inland Printer* 129, No. 3, June, 1952, pages 68, 71 and 93 (3 pages). The author states that the stopping-out operation is often glossed over in deep-etch instructions. He then reviews the procedures and characteristics of the different methods of stopping-out.

THE EXPOSURE IN OFFSET PLATEMAKING. Charles W. Latham. *American Printer* 133, No. 9, September, 1952, pages 36-7, 58, 60, 62, 64 and 66 (7 pages). This is one of a series of articles on lithographic platemaking and emphasizes the need for control in plate exposures. Discussed are the effects of dark reaction, coating pH, spectral sensitivity, exposure guides, the Sensitivity Guides, exposure latitude, and tone reproduction.

PLATE ETCHES. *Modern Lithographers and Offset Printer* 48, No. 9, September, 1952, pages 200 and 202 (2 pages). A brief article on how the plate etch is believed to function in desensitizing the plate surface. The dependence on suitable pH to remove the oxide film and to replace it with an ink-repellent film is described.

FINISHING AND RUNNING LITHOGRAPHIC PLATES. Charles W. Latham. *American Printer* 134, No. 1, January, 1953, pages 34-5 and 58-62 (7 pages). Continuation of a previous article on albumin platemaking, covering the finishing steps of platemaking, namely, preservation of the plate with asphaltum. The proper technique of application of a thin coat of asphaltum is discussed. Care of plate for storage purposes after being removed from press is also discussed. Ten reasons for blind plates are given, and if proper techniques are used, blind plates can be avoided. Use of lacquers on albumin plates is discussed. Handling of plates on press, as to etching, gumming, and final storage after run, is mentioned. In running of plates, the all important things to remember are the minimums: minimum amount of fountain, minimum amount of ink, and minimum amount of pressures.

STEPPING PRESS PLATES WITH TRANSPARENT PLASTIC KEYS. Otis W. Muckenfuss. *Modern Lithography* 21, No. 4, April, 1953, pages 45 and 119 (2 pages). By drawing key lines on a plastic overlay sheet which is taped to the press plate, film positives or negatives can be stepped onto the plate. Between each exposure the film is registered to the proper position on the overlay, the rest of the plate area masked out, and the step exposure made.

SYSTEM FOR MAKING ALBUMIN PLATES IS TOO COMPLEX. Charles F. King. *Inland Printer* 131, No. 2, May, 1953, pages 62-64 (3 pages). The author discusses some of the recently published information on the making of albumin or surface plates. He believes that it is now too complex due to the added steps, such steps having been added to avoid troubles which may not be current in the plant. The importance of plate grain, exposure, developing ink, and etching are also discussed.

PLATEMAKING — MATERIALS AND METHODS

* METHOD OF MAKING A HYDROLYZED CELLULOSE ESTER PRINTING PLATE. *U. S. Patent 2,607,683.* Edward C. Yackel and Charles F. Amering. *Official Gazette* 661, No. 3, August 19, 1952, page 804. 1. The method of making a photolithographic printing plate which comprises coating a substantially fully esterified cellulose organic acid ester support with a layer of hydrophilic colloid containing silver halide and an aqueous colloidal dispersion of from about 3 to 15 parts of a water-insoluble, soft, acrylate resin per

part of hydrophilic colloid, exposing the sensitive colloid layer to light under an image, developing the exposed layer under conditions of tanning development, treating the developed layer with hot water to swell the colloid in the exposed regions of the layer and to remove hydrophilic colloid from the unexposed regions without removing the resin, treating the layer with a hydrolyzing solution to hydrolyze the portions of the cellulose ester support beneath the exposed regions of the colloid layer and removing all of the colloid layer and resin from the support.

* PLANOGRAPHIC PRINTING PLATES. *U.S. Patent 2,598,043.* Frank L. Eichner. *Chemical Abstracts* 46, No. 22, November 25, 1952, Column 10992. Al sheets or strips (I), suitable for use in planographic printing, are prepared by: (1) electrolyzing I (as the anode) in an NaCl solution at a pH 2-4 and then rinsing, and (2) submerging the I in boiling H_20 and then drying. A peculiar oxide coating is produced that makes the plates equally suitable for direct image or for photographic use in planographic printing. Other chlorides (K, Mg, Li, and Ca) work equally well.

* PRODUCTION OF PLANOGRAPHIC PRINTING PLATES. *British Patent 678,187.* Gevaert Photo Production N. V. and J. P. Poels. *Printing Abstracts* 7, No. 11, November, 1952, pages 551-2. An addition to 648,897, in which a hydrophilic colloid layer on a support is treated either before or after printing-down the original with one or more reducing agents (e.g., pyrogallol or pyrocatechol) and before printing-down with one or more salts of a metal exhibiting more than one valency (e.g., copper, cobalt, nickel or chromium), the salts being in the higher state of valency. After printing-down the colloid layer may be treated with a hardening agent (e.g., formaldehyde for gelatine, casein, and cellulose esters or zirconium salts for polyvinyl alcohol), with or without a substance which forms an insoluble compound with the metal salt. British Patents can be obtained for approximately thirty-five cents from Patent Office, 25, Southampton Buildings, London, W.C. 2, England.

* PRODUCTION OF COLLOID PHOTO IMAGES FOR USE IN PHOTOMECHANICAL PRINTING. *British Patent 678,599.* A. G. Kalle and Company. *Printing Abstracts* 7, No. 11, November, 1952, page 552. A tanned colloid photoimage is obtained by exposing to light under a pattern a base material coated with a layer of water-soluble, film-forming colloidal organic substance which can be hardened and which contains a light-sensitive aromatic azido compound (e.g., sodium 4: 4^1-diazidostilbene-2 : 2^1-disulphonate) and, after developing in water, heating (e.g., to 200-400° C.) to convert the colloid image into a mechanically resistant, insoluble, fatty ink-receptive form. British Patents may be obtained from the Patent Office, 25, Southampton Buildings, London, W. C. 2, England, for approximately thirty-five cents.

* PHOTOLITHOGRAPHY BY DIAZOTYPE SENSITIZED LAYERS. *French Patent 997,596.* M. Kugl, A. Todt, W. Neugebauer, J. Barthenhoier and W. Mauss. *Le Procédé* 48, Nos. 5-6, 1952, page 46 (in French). An absorbent, nonmetallic sheet (paper, regenerated cellulose, or a cellulose ester, superficially saponified) is covered with a solution of a suitable diazosensitiser, dried, covered by a layer of a water-soluble colloid, dried again, exposed under a positive, washed to eliminate the colloid not rendered insoluble, dried, exposed uniformly to light, damped and inked, the ink adhering only to the insoluble colloid and giving a positive image which can be transferred on to paper. The diazo compounds used are preferably the high molecular weight products from para-diazodiphenylamines and formaldehyde, capable of tanning hydrophilic colloids. The colloid can be gum arabic, a cellu-

lose ether, polyvinyl alcohol, or an alginate. Development is preferably effected in a concentrated solution of zinc chloride. *Printing Abstracts* 7, No. 9, September, 1952, pages 458. French patents may be obtained for six cents from Imprimerie nationale, Rue de la Convention 27, Paris (15e) France, or as photoprint from the U.S. Patent Office, Washington 25, D. C.

* PROCESS FOR MAKING PRINTING PLATES. *French Patent 904,255.* Kalle and Co., A.G. *Caractère* 3, No. 7, 1952, page 915 (in French). Process for sensitizing zinc or aluminum sheets by diazo compounds sensitive to light without the addition of colloids. Incorporation of the diazo compounds in porous layers formed on the metallic sheets, particularly oxide films. *Printing Abstracts* 7, No. 9, September, 1952, page 457. French patents may be obtained for approximately six cents from Imprimerie nationale, Rue de la Convention 27, Paris (15e) France, or as a photoprint from the U.S. Patent Office, Washington 25, D. C.

DIAZO SENSITIZERS. George W. Jorgensen. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 97-104 (8 pages). Since the war, considerable interest has revived in the use of diazo compounds as image forming materials and as substitutes for bichromated plate coatings in lithography. This paper briefly reviews (1) some of the diazo materials, (2) the early patents of Kalle and Company of Germany, and (3) some of the work on diazo surface and deep-etch processes at the Lithographic Technical Foundation. Copies of the current Proceedings may be obtained from the Secretary, Dr. Paul Hartsuch, 334 S. Kensington Avenue, LaGrange, Illinois, for five dollars.

* PHOTOSENSITIVE PRINTING PLATE HAVING A LIGHT-SENSITIVE COATING CONSISTING OF A NON-PROTEIN COLLOID, A PHOSPHATE AND A CHROMIUM COMPOUND. *U.S. Patent 2,624,673.* Frederick H. Frost and Frederic E. Brinnick. *Official Gazette* 666, No. 1, January 6, 1953, page 235. 1. A photo-sensitive plate comprising a base having a planographic printing surface and a surface coating thereon consisting of the dried residue of an aqueous composition consisting essentially of water, a non-protein hydrophilic organic film-forming hydrocolloid of the group consisting of methyl cellulose, hydroxyethel cellulose, sodium carboxymethyl cellulose, polyvinyl alcohol, polyvinyl pyrrolidone, sodium acrylate, gum arabic, gum ghatti and mesquite gum which is capable of being tanned by actinic radiation in the presence of ammonium dichromate, a hexavalent chromium compound of the group consisting of water-soluble chromates and dichromates, a water-soluble ionizable phosphate and from 0% to 50% by weight based on the weight of the hydrocolloid of an organic, normally liquid, non-volatile water-repellent substance of the group consisting of natural and modified animal and vegetable oils and mineral oils, the pH value of the composition being above 3.0 and the pH value of the dried coating being not greater than 9, the weight ratio of chromium compound to hydrocolloid being within the range from 1:4 to 2:1 and the phosphate being within the range from 10% to 35% of the weight of the hydrocolloid.

* PHOTOSENSITIVE PRINTING PLATE HAVING A LIGHT-SENSITIVE COATING CONSISTING OF A COLLOID, A PHOSPHATE, AND A CHROMIUM COMPOUND. *U.S. Patent 2,624,672.* Frederick H. Frost and Frederic E. Brinnick. *Official Gazette* 666, No. 1, January 6, 1953, page 235. 1. A photo-sensitive plate comprising a base having a planographic printing surface and a coating thereon consisting of the dried residue of an aqueous mixture consisting essentially of a light-sensitive colloid comprising a protein, a water-soluble chromium compound of the group consisting of chromates and dichromates and a water-soluble phosphate, a dilute aqueous solution of which

has a pH value above the isoelectric point of the protein, the ratio of chromium compound to protein being within the range from 1 part of chromium compound to from 1 to 3 parts of protein and the ratio of phosphate to protein being within the range of from 15 to 50 parts of phosphate to 100 parts of protein.

*PROCESS OF FIXING LITHOGRAPHIC DIAZOTYPE PRINTING FOILS WHICH HAVE BEEN EXPOSED TO LIGHT. *U. S. Patent 2,626,866.* Wilhelm Neugebauer and Jakob Barthenheier. *Official Gazette* 666, No. 4, January 27, 1953, page 1059. 1. In a process for making a lithographic printing material, from photosensitive material sensitized with a light-sensitive diazo compound which upon exposure to light decomposes into a fatty ink-receptive substance, by exposing the photosensitive surface of said material to light through an original, the fixing method comprising the steps of treating said exposed surface of the material with an aqueous solution containing a water soluble organic colloid substance to coat said exposed surface of said material with a layer of said water soluble organic colloid substance and subjecting said coated material once more to the action of light without using an original, whereby said material will be no longer capable of being affected by light but upon removal of said water soluble organic colloid substance said material will be capable of functioning as a lithographic printing plate.

*PAPER PLANOGRAPHIC PRINTING PLATES WITH STABILIZED HYDROPHILIC COATING. *U.S. Patent 2,635,537.* S. V. Worthen. *Official Gazette* 669, No. 3, April 21, 1953, page 746. 1. A planographic printing plate comprising a paper base having thereon a planographic printing surface layer, said layer comprising insoluble hydrophilic adhesive material and finely divided inert mineral pigment and having therein capillary interstices and pores containing the evaporation residue of an aqueous solution containing a water-soluble multivalent metal salt of an acid of the group consisting of formic acid and acetic acid in quantity in substantial excess of that required for reaction with other ingredients of said layer and the evaporation residue of an aqueous solution containing a water-soluble uni-univalent salt of the group consisting of the alkali metal and ammonium salts of the acids of the group consisting of formic acid and acetic acid in quantity mounting to at least one-fifth of the weight of the multivalent metal salt.

*DIMENSIONALLY STABLE CELLULOSE ESTER LITHOGRAPHIC PRINTING PLATES. *U.S. Patent 2,635,962.* G. F. Nadeau and C. B. Starck. *Official Gazette* 669, No. 3, April 21, 1953, pages 868-869. 1. A light-sensitive photographic element comprising an aluminum foil and a sheet of cellulose organic acid ester bonded together with an inter-layer comprising essentially a resinous copolymer of vinyl chloride, vinyl acetate and an α,β-ethylenically unsaturated dicarboxylic acid adherent thereto, the said cellulose organic ester sheet having a layer of cellulose nitrate containing an antihalation dye on the inner surface and a hydrolyzed stratum on the outer surface sensitized with an agent selected from the class consisting of oxidants for collulose in the presence of light and light-reducible ferric salts incapable of oxidation of cellulose to the alkali-soluble state in the presence of light, and the said aluminum foil having the outer surface thereof covered with a protective layer of the said resinous copolymer.

*PLANOGRAPH PRINTING PLATES. *British Patent 678,097.* Addressograph—Multigraph Corporation. *Photographic Abstracts* 33, Part 1, No. 129, 1953, page 45. Planographic printing plates comprising a roughened "3S" aluminum sheet with an anodic aluminum coating of 2.40-3.50 mg. per square inch

roughened surface, are stated to be suitable for use in both direct and photographic printing. The plates are stated to be highly resistant to fingerprints, to have a good image life and not to oxidize during storage. Details of their preparation for application of the coating are given.

PLATEMAKING — CHEMISTRY

* PROCESS FOR RENDERING PROTEINACEOUS TEXTILE MATERIALS WATER REPELLENT. *U. S. Patent 2,599,590.* Arnold M. Sookne and Alfred E. Brown. *Official Gazette* 659, No. 2, June 10, 1952, Page 377. 1. Process for rendering proteinaceous textile materials water repellent which comprises applying to the proteinaceous textile material an aqueous solution of a water-soluble fatty acid soap in a concentration of about 0.25% and thereafter applying to the material an aqueous solution of a water-soluble aluminum salt in a concentration of about 0.1%.

RELATIVE HUMIDITY IN PLATEMAKING. Charles W. Latham. *American Printer* 133, No. 8, August, 1952, pages 54-5, 65-6, 68 and 70 (6 pages). The author discusses the effects of relative humidity in platemaking. Included are: what is relative humidity, where and how to measure it, the use of the psychrometer, errors in readings, effect of high humidity, albumin scum, tacky coatings, and oxidation.

*THE USE OF RADIOACTIVE TRACERS IN THE STUDY OF THE MECHANISM OF ACTION OF CORROSION INHIBITORS. D. M. Brashear and E. R. Stove. *Chemistry and Industry* 1952, Pages 171-2. This preliminary note reports studies which show that radioactive Cr and the benzoate radical remain on mild steel after washing. The influence of time of immersion of the steel in the soln. of radioactive K_2CrO_4 and also of the concn. of the soln. on the amt. of Cr on the steel were studied. In both cases the graph has the form of a typical adsorption isotherm. Further work is in progress. *Chemical Abstracts* 46, No. 11, June 10, 1952, Columns 4983-4. *Chemistry and Industry* is published by Society of Chemical Industry, 56 Victoria Street, London, S. W. 1, England.

PLATEMAKING — METAL SURFACES

*EFFECT OF DEFORMATION ON THE CORROSION OF METALS. E. M. Zaretskii. *Zhur. Priklad. Khim* (J. Appl. Chem.) 24, Pages 477-84 (1951). 3 mm. thick Cu; 3 mm. thick Zn; and 2 mm. thick Al were subjected to known tensile stresses σ, and the degree of corrosion was detd. by the loss of wt. in 24 hours. The corrosion of stresses Al in 0.3 *M* HCl increases with σ up to about 20%, then remains constant; in 0.5 *M* NaCl, it is constant up to about $\sigma = 70\%$, then increases (in 120 days experiments). With Zn in 0.0125 *M* H_2SO_4, the loss of weight increases with σ; the loss of tensile strength first decreases, remains constant between $\sigma = 10$ and 50%, then increases. With Cu in 0.1 *M* $(NH_4)_2S_2O_8$, buffered to pH 2, the corrosion decreases somewhat with increasing σ; in 0.005 *M* H_2SO_4, stress has no effect on the corrosion. With steel in 1.5 *M* H_2SO_4, the corrosion increases with σ only very slightly, more significantly at $\sigma = 70$-90%. *Chemical Abstracts* 46, No. 11, June 10, 1952, Column 4984. Photocopies of this article may possibly be obtained from the U. S. Department of Agriculture Library, Washington 25, D. C.

CORROSION CONTROL WITH ORGANIC INHIBITORS. J. N. Breston. *Industrial and Engineering Chemistry* 44, No. 8, August, 1952, pages 1755-65 (11 pages). Inorganic inhibitors of corrosion by water are generally effective only under alkaline and oxidizing conditions. In the presence of acids, acid brines, high temperatures, reducing conditions, and microbiological action they afford little or no protection. There are many large scale operations in which water is used or handled under such conditions and

where effective corrosion control is desirable or necessary. A solution to the problem has been found in organic compounds which, by virtue of their physical and chemical adsorption onto the corroding surface, will protect it from further corrosion. They form protecting films of molecular thickness and are effective in concentrations as low as a few parts per million. The paper outlines the mechanism, properties, and conditions of application of organic inhibitors and indicates their application in acid cleaning solutions, etc.

PITTING CORROSION CHARACTERISTICS OF ALUMINUM: INFLUENCE OF MAGNESIUM AND MANGANESE. P. M. Aziz and Hugh P. Godard. *Industrial and Engineering Chemistry* 44, No. 8, August, 1952, pages 1791-95 (5 pages). This work was undertaken to determine the influence of alloying magnesium and manganese with aluminum upon its pitting probability and pitting rate. Aluminum in the purity range of 99.5 to 99.99% was investigated using additions of 1.0% magnesium, 1.25% manganese, and 0.5% magnesium-0.5% manganese. The additions reduce the probability of pitting and also the rate. The magnesium-banganese addition reduces the pitting probability most but the straight manganese addition has the greatest effect in slowing the rate of pitting. Above 99.7% purity the probability of pitting is reduced with increasing purity. The beneficial effects of magnesium and manganese are valid in the range above 99.5% aluminum. Aluminum, to be used in environments where pitting corrosion may be encountered, should be alloyed with magnesium and/or manganese. Commercial alloys of this type are 52S (2.5% magnesium) and 3S (1.25% manganese).

CRONAK PLATE SURFACE TREATMENT IS SIMPLIFIED. *Modern Lithography* 20, No. 9, September, 1952, pages 43-4 (2 pages). Article reprinted from Research Progress (LTF) No. 25. Original Cronak instructions suggested treatment after graining and requirement to dry newly formed Cronak film before using plate. Revisions in instructions include (1) use 2% sodium bichromate in grainer, (2) Cronak before plate is coated, (3) don't bother to dry the Cronak surface after treatment and before coating plate.

* CHEMICAL BRIGHTENING OF ALUMINUM. *U.S. Patent 2,613,141.* William C. Cochran. *Official Gazette* 663, No. 1, October 7, 1952, page 202. 1. A method for chemical brightening of aluminum which comprises immersing an aluminum article in a solution consisting essentially of about 60 to 80 per cent phosphoric acid, about 1 to 10 per cent hydrogen peroxide and about 15 to 35 per cent water, referred to the total weight of the aforesaid components, the solution being maintained at a temperature above about 70° C.

* BRIGHTENING BATH. *U.S. Patent 2,614,913.* Harold J. Reindle and Stanley R. Prance. *Official Gazette* 663, No. 3, October 21, 1952, page 833. 1. A brightening bath for use in connection with aluminum and/or aluminum alloys wherein the brightening is carried out at a temperature varying between 185° F. to 212° F. consisting of; a solution having as its basic ingredients ammonium bifluoride .30% to .75%, nitric acid 2.0% to 7.5%, chromic acid .30% to .75% and ethylene glycol .40% to .1.0% and wherein water makes up substantially the remainder of the bath.

* PROCESS FOR COATING ALUMINIUM AND ALUMINIUM ALLOYS. *British Patent 673,677.* American Chemical Paint Company. *Tin-Printer and Box Maker* 28, No. 333, October, 1952, page 16. A process for producing protective coatings on aluminium comprises subjecting the metal to the action of an aqueous acid solution containing phosphate ions, fluoride ions and dichromate ions and with a pH value between 3.2 and 7. The concentrations of these ions in the

solution are specified. British patents may be obtained from the Patent Office, 25, Southampton Buildings, London, W. C. 2, England, for thirty-six cents.

A SIMPLIFIED CRONAK TREATMENT. *National Lithographer* 59, No. 10, October, 1952, page 50. A change in the usual method of applying Cronak solution is reviewed, i.e., no need for drying the newly formed Cronak surface before the plate is coated. Sink, tray, and whirler methods of application were reviewed. Article from *Research Progress* No. 26, which can be obtained from LTF, 131 East 39th Street, New York 16, N. Y., for fifty cents to members, eighty-five cents to non-members.

ANODIZING ALUMINUM WITH SULFAMIC ACID. COMPARISON OF SULFURIC, OXALIC AND SULFAMIC ACID PROCESSES. Sakae Tajima, Yasuyuki Kimura and Toshiro Fukushima. *Metal Finishing* 50, No. 10, October, 1952, pages 67-71 (5 pages). An exhaustive article on the use of sulfamic acid anodizing baths. Article gives pre-treatment of aluminum, electrical set-up, and bath concentrations. Also, discusses AC-DC- and AC, DC anodizing.

* A METALLOGRAPHIC STUDY OF PITTING CORROSION INDUCED IN 2S ALUMINUM ALLOY BY EXPOSURE TO TAP WATER. E. C. Pearson, H. J. Huff and R. H. Hay. *Canadian Journal of Technology* 30, October-November, 1952, pages 311-316. Samples of above alloy, in both the fully work-hardened and annealed states, were examined under the conventional light microscope and electron microscope after exposure to pitting corrosion conditions in tap water for periods of 15 minutes, 24 hours, and 10 weeks. Prior to exposure all sample panels received a uniform pre-treatment designed to bring the panel surfaces into the same initial condition. Typical photomicrographs are presented to show variation in pit structure with time of exposure and with metallurgical conditions. 17 references. *Battelle Technical Review* 2, No. 1, January, 1953, 21a. Canadian Journal of Technology is published by National Research Council, Ottawa, Canada.

* COMPOSITION FOR TREATING ALUMINUM AND ALUMINUM ALLOYS. *U.S. Patent 2,620,265.* Frederick H. Hesch. *Official Gazette* 665, No. 1, December 2, 1952, page 244. 1. A composition for the chemical brightening of aluminum and aluminum alloys comprising an acid aqueous solution containing trivalent chromium ions in amount from about .005 to about 0.5%, and hydrogen and fluoride ions in amount stoichiometrically equivalent to from about 0.5 to about 5% nitric acid, and about .01 to about 0.5% hydrofluoric acid by weight of solution.

* METHOD OF CONDITIONING BRIGHTENING BATHS. *U. S. Patent 2,625,468.* Stanley R. Prance and Harold J. Reindl. *Official Gazette* 666, No. 2, January 13, 1953, page 549. 1. In the method for brightening aluminum and aluminum alloy parts in a chemical bath and simultaneously maintaining the effectiveness of the bath wherein the bath consists essentially of an aqueous solution of nitric acid together with the ions of ammonium and fluoride, a metal and chromic acid and a carbohydrate, the steps comprising; dipping aluminum and/or aluminum alloy parts into said bath for brightening the surface of said parts, removing between .004 and .01 of a gallon per gallon of said brightening bath for each square foot of aluminum and/or aluminum alloy treated therein, and adding new solution of the same composition as the initial bath in equal quantity to the removal, whereby the brightening action of the bath is maintained substantially constant.

* CORROSION PROTECTED ZINC PRODUCTS AND METHOD OF PRODUCING THEM. *U. S. Patent 2,631,951.* Allan E. Chester. *Official Gazette* 668, No.

3, March 17, 1953, page 798. 1. A process of coloring zinc and of protecting it against corrosion which comprises treating a zinc surfaced article with an amount of an aqueous solution consisting essentially of chromic acid, ammonium persulfate and trifluoroacetic acid sufficient to form a uniform bronze colored film on said article.

PLATEMAKING — POLYMETALLIC

• ELECTROPLATING ALUMINUM AND ITS ALLOYS. *Austrian Patent 168,102.* Hubert Vlk. *Chemical Abstracts* 46, No. 14, July 25, 1952, Column 6529. The articles to be plated are first cleaned mechanically and then pretreated for 5-10 min. at a c.d. of 10 amp. per sq. dm. and a voltage of 4-6 v. as cathodes in a bath that contains KOH 22, Na_2CO_3 20, $K_3Cu(CN)_4$ 5, KCN 5 g., and H_2O 1 l. Thereafter they are electroplated and polished in the usual way. Photoprints of Austrian patents may be obtained from the U. S. Patent Office, Washington 25, D. C.

TRI-METAL PLATES. *Modern Lithographer and Offset Printer* 48, No. 7, July, 1952, pages 148 and 150 (2 pages). The author discusses several difficulties encountered in tri-metal plates. He feels that different "harder" developing ink is necessary. He also feels that the loss of sensitivity of the copper image is due to oxidation or corrosion of the copper. It is also pointed out in a Cu-Cr-acid (phosphoric) system, an electrolytic action will take place at the expense of the Cr, thus making the image fuller.

• PHOTO MECHANICAL PRINTING PLATE. *British Patent 675,068.* Thomas I. Archer. *Tin-Printer and Box Maker* 28, No. 334, November, 1952, page 14. In a process for making a printing plate for photo-lithography, the grease is removed from a polished stainless steel plate and the bath is subjected to electrolysis in a phosphoric acid bath and then copper plated in an acid copper bath. The plate is then coated with a bichromated colloidal solution of either fish glue, polyvinyl alcohol, albumen or gum arabic. The plate is placed with a negative in a frame and exposed to sunlight or arc lamps. The unexposed portions are cleared and etched in a solution of iron perchloride 38 to 45° B, for example, 1% of a 45° B solution in water-free alcohol, rectified spirit or industrial methylated spirit. After removing the stencil, a copper image is left. British Patents may be obtained for thirty-five cents, approximately, from Patent Office, 25, Southampton Buildings, London, W. C. 2, England.

LTF GIVES DETAILS ON BI-METAL PLATE, ROLLER-PLATING, OTHER DEVELOPMENTS. *Modern Lithography* 20, No. 12, December 1952, pages 51-2, 59, 73-4 and 123 (6 pages). Details on making LTF's Copper Aluminum plate from a negative are reprinted from Research Progress No. 27. Also reprinted is LTF's method for copper deposition by chemicals on steel ink rollers in the press. Copies of Research Progress may be obtained from LTF, 131 E. 39th Street, New York 16, N. Y., for eighty-five cents to non-members and fifty cents to members.

• IMPROVEMENTS IN LITHOGRAPHIC PLATES. *British Patent 675,972.* The S. D. Syndicate, Ltd. *Tin-Printer and Box Maker* 28, No. 335, December, 1952, page 12. A plate of stainless steel has etched cavities lined with copper or brass. British patents can be obtained for approximately 35 cents from Patent Office, 25, Southampton Buildings, London, W. C. 2, England.

PLATEMAKING — GRAINING

WHY DO ZINC AND ALUMINUM PLATES NEED GRAINING? Charles F. King. *Inland Printer* 129, No. 5, August, 1952, pages 68-9 (2 pages). Recent experience with smooth bi- and tri-metal plates has caused a number of investigators to re-examine the func-

tion of grain. A number of experimenters reported to the author success in running zinc and aluminum plates without grain. The author also reports his own success with smooth aluminum, and concludes that the plate grain produces a grainy appearance in the press sheet which more than any other factor accounts for the "typical offset look."

DAMAGE TO LITHO PLATES CAUSED BY GRAINING ABRASIVES. *Paper and Print* 25, No. 3, Autumn, 1952, pages 268-9 (2 pages); (From Patra Information Leaflet No. 48, reviewed in Patra News, June, 1952). Red rust spots or corrosion pits in aluminum or zinc plates may break up the image or cause scumming. They are due to small steel particles in the graining abrasive.

IS YOUR GRAIN TOO COARSE? (First in Series). Paul W. Dorst. *Modern Lithography* 21, No. 1, January, 1953, pages 32-4 and 117 (4 pages). In examinations of thousands of plates, the author finds that large, deep pits in grain lead to scum and blind spots. Most grains have a few of these coarse pits which affect printing quite adversely.

HOW TO ANALYZE YOUR GRAIN (Second in Series). Paul W. Dorst. *Ibid.*, No. 2, February, 1953, pages 32-4 (3 pages). In this second of three articles on grain, the author discusses how to analyze plate grains by their appearance under a 40 to 50 power microscope.

HOW TO GET A GOOD GRAIN (Third and Final in Series). Paul W. Dorst. *Ibid.*, No. 3, March, 1953, pages 32-4 (3 pages). Concluding article on how to get a good grain. In it, the importance of abrasive, marble size and load, graining machine, and speed is discussed.

PAPER — GENERAL

PAPER AND THE PRINTER. A. J. Alderson. *Paper and Print* 25, No. 3, Autumn, 1952, pages 283-4, 286, 289-90, 292 and 294 (7 pages). The author describes the reasons why paper difficulties experienced by the printer have not ceased with the end of wartime shortages and restrictions but continue to present themselves when supplies have become more plentiful. The inherent properties of vegetable fibers, the usual rush conditions associated with printing orders, and the incorrect handling of paper are given as some of the sources of trouble and are discussed quite at length. *Bulletin of the Institute of Paper Chemistry* 23, No. 3, November, 1952, page 198.

THE CARE AND STORAGE OF PAPER. L. E. Kussow. *National Lithographer* 60, No. 2, February, 1953, pages 28-30 (3 pages). Losses due to improper paper packaging, improper handling and uneven moisture content are discussed. These losses can be avoided for the most part by selecting papers designed to resist dimensional change and which are properly packed. Also, paper packages should be brought to pressroom temperature before opening and should not be opened until ready to run. Paper should be conditioned if it is too far out of balance with the pressroom. It should also be wrapped while awaiting further printing.

SURFACE AND BODY CHARACTERISTICS OF BOARD FOR PRINTING. A. T. Luey. *TAPPI* 36, No. 4, April, 1953, pages 124A-127A (4 pages). The author discusses 1. uniformity of caliper, 2. uniformity of moisture content, 3. pick, 4. compressibility and smoothness, 5. color and brightness uniformity, and 6. ink absorbency.

*ACID RESISTANT WET STRENGTH PAPER. *U.S. Patent* 2,639,242. Tzeng-Jiueq Suen. *Official Gazette* 670, No. 3, May 19, 1953, page 840. An acid-resistant wet strength paper made by incorporating into said paper an aqueous solution of a water-soluble resin, and curing the paper at 105-110° C. for about 2 minutes, said resin being a condensation product formed by refluxing an alkaline aqueous solution containing reactive ingredients consisting of formaldehyde, phenol, and beta-alanine in the mol ratio of 1.5:1.0:0.5, respectively, said paper undergoing substantially no loss in wet strength on being immersed for about one week in a 5% citric acid solution having a pH of about 1.8.

THE RELATION OF PAPER AND MOISTURE. Part I. RELATIVE HUMIDITY DEFINED. Wm. H. Bureau. *Printing Equipment Engineer* 83, 8, May, 1953, pages 19-20 (2 pages). The author discusses relative humidity and its effects on paper. Paper changes about 1% in moisture content for about 10% change in relative humidity. This causes the fibers in the paper to change size, many times as much percentagewise in diameter as in length. The sum total of this change is partly absorbed between fibers and partly transmitted to the edges of the sheet. Papers differ in their responsiveness depending on the compactness of their structure. Non-uniformity of moisture content across the sheet results in wavy or tight edges. Therefore, paper should be wrapped to hinder moisture changes or hung to equalize moisture across the sheet. In cold weather, temperature also is important in that cold paper will lower the temperature of the surrounding air, raising its relative humidity.

PAPER COATING

NEW HORIZONS IN PAPER COATING. Peter J. Massey. *TAPPI* 35, No. 7, July, 1952, Pages 8A, 10A, 12A, 14A (4 pages). The author discusses the development of printing coatings and functional coatings (waxed and oiled papers, asphalt coating papers, solvent resin

coatings, rubber and other elastomer latices, and thermoplastic coatings), the opportunities which they offer to the printer and paper converter, and requirements for their further exploitation. *Bulletin of the Institute of Paper Chemistry* 22, No. 12, August, 1952, page 925.

WATER-RESISTANT STARCH COATINGS. W. C. Black. *TAPPI* 35, No. 7, July, 1952, Pages 44A, 46A, 48A, 50A & 52A (5 pages). Methods of reducing the water sensitivity of starch films and coatings are discussed. They are: 1. the addition of water resistant materials (rubber latices, polyvinyl alcohol wax emulsions, rosin, etch.) 2. addition of materials which change redispersing properties (chromium and antimony compounds, aldehydes and aldehyde resins). Factors affecting the second group (starch-resin coatings) are cooking procedures, drying time, concentration, pH, water-holding ability of starch, resin, and starch.

* METHOD OF MAKING COATED PAPER MOISTURE RESISTANT. *U.S. Patent 2,617,743.* Richard J. Grimm. *Official Gazette* 664, No. 2, November 11, 1952, page 598. 3. In the calendering of a dried paper web which has been coated with a mixture embodying clay and an adhesive selected from the group consisting of casein and soya protein, the method of providing the dried web with a moisture-resistant glossy print receptive surface suitable for high speed lithographic printing, which comprises forming an intimate intermixture of steam and formaldehyde, impinging said mixture onto a- coated face of the dried coated web and immediately subjecting the thus treated face of the web to the ironing action of calender rolls until such face has been effectively calendered.

SYNTHETIC LATEXES FOR PAPER COATINGS. Edward J. Heiser. *TAPPI* 36, No. 2, February, 1953, pages 133-134A (2 pages). The author describes the results obtained with Dow Latex 512-K as a pigment binder, with particular reference to one of the latest developments, the use of latex in size-press coatings containing latex, starch, and clay. This method produces a filled paper surface which has greater density and smoothness, resulting in a more uniform printing surface and a paper of greater dimensional stability. Size-press coating provides also an excellent base paper for top-quality, off-machine coating. *Bulletin of the Institute of Paper Chemistry* 23, No. 7, March, 1953, pages 493-494.

PAPER TROUBLES

* DE ELECTRIFICATION OF THE PAPER WEB. Martin Buttner. *Das Papier* 6, No. 9/10, May, 1952, Pages 184-5; *Wochbl. Papier-fabr.* 80, No. 10, May 31, 1952, Page 318 (in German). A high-frequency generator (which furnishes high voltages with very low current intensities through suitable electrodes) serves to ionize the air surrounding the moving sheet, thus freeing it from static electricity. The equipment occupies little space and presents no hazards. 1 illustration in the first reference. *Bulletin of the Institute of Paper Chemistry* 22, No. 11, July, 1952, Pages 858-9. *Das Papier* is published by Eduard Roether Verlag, Liebigstrasses 24, Darmstadt, Germany.

* NEWSPAPER PRODUCTION. H. L. McWhorter. *New England Printer and Lithographer* 15, No. 5, June, 1952, page 28; *American Newspaper Publishers' Association,* Research Bulletin No. 57, July 18, 1952, page 28. The author concludes from tests conducted at the Goss Printing Press Company that paper is much more uniform and possesses greater strength than is commonly supposed, so that it is not the first cause of web breaks; he considers that 75% of the faults blamed on paper are actually faults of the printing machine. Newly manufactured paper is rewound at a tension of four to five pounds per inch of width to prevent telescoping during shipment. On the printing machine, the normal pull is about one half pound tension per inch of width. Paper, even with slime holes, edge cuts, etc., is there-

fore about 10 times stronger than is actually necessary under normal conditions, and web breaks are caused by mechanical defects in the press which strain the paper abnormally. Misalignment, out-of-round rotating elements, and faulty tension control on the paper web are listed as the mechanical sources of web breaks. The author concludes with a critique of contemporary tension-control devices and a statement of criteria for an improved system. When the Goss Printing Press Company employed such a system, it was able to run at 2100 f.p.m. with a remarkable freedom from web breaks. *Bulletin of the Institute of Paper Chemistry* 23, No. 1, September, 1952, pages 35-6. *New England Printer and Lithographer* is published at 470 Atlantic Avenue, Boston, Massachusetts.

• STATIC ELECTRICITY IN TEXTILES; A STEP-CHILD OF MODERN RESEARCH. Sidney M. Edelstein. *American Dyestuff Reporter* 41, No. 17, August 18, 1952, pages P518-24 (7 pages). The author employs the question-and-answer method to present his views on antistatic agents, a type of textile chemical specialty. He defines and explains static electricity and points out the difficulties it causes in both the manufacture and use of textiles. The new, wholly synthetic hydrophobic fibers aggravate the problem in the manufacture of textiles, static has been controlled by humidification of mills, by damping of fibers, by application of hygroscopic substances, by application of electrolytes, such as salts and sulfonated products, by grounding of textiles and machines, and by ionization of air at trouble spots either with radioactive substance or by electrical discharge. The author emphasizes the advantages arising from the application of specially compounded chemical antistatic agents to textiles for the control of static. These not only may continue their effect on the textile until it reaches the consumer and thus contribute to finish, but they also can be so designed as to possess some fastness. 1 table and 1 reference. *Bulletin of the Institute of Paper Chemistry* 23, No. 1, September, 1952, page 48. American Dyestuff Reporter is published by Howes Publishing Company, Inc., 44 East 23rd Street, New York 10, New York.

• FUNDAMENTAL STUDIES OF THE ORIGIN OF ELECTRIC ADHESION IN A PILE OF PAPER. Holger Lueder. *Das Papier* 6, Nos. 23/24, December, 1952, pages 504-510 (in German). The author presents the following four laboratory methods for obtaining electrostatically charged paper for the study of the sheet-to-sheet adhesion caused by the charge: (*a*) rubbing the top of a pile of dry paper with the hand; (*b*) passing a number of superimposed webs of dry paper between rolls having different coverings, e.g., paper and felt; (*c*) passing an air stream through a corona discharge so as to carry away ions predominantly of one sign of charge and directing this air stream against a pile of paper resting on a grounded plate; and (*d*) passing a direct current through a pile of dry sheets placed between a pair of electrodes. Method (*d*) was used to charge supercalendered paper for the study of the sheet-to-sheet adhesion. The maximum force (in the plane of the sheet) exerted by a spring balance on the top sheet of a charged pile was observed at the instant the sheet began to slip. The uniformly distributed load on the top sheet of an uncharged pile of the same paper was progressively increased until slippage of the top sheet occurred under a force equal to that observed for the case of the charged sheet. This critical load on the top sheet was considered to be a measure of the adhesion force between the charged sheets and was divided by the area of the sheet to obtain the "adhesion pressure". Considering adjacent charged sheets to act as condenser plates separated by air and the adhesion pressure to correspond to the attractive force per unit area of condenser plate, the author uses the conventional equations of electrostatics to calculate the charge per unit area and the field strength in the equivalent air space between the sheets.

Using an empirical relationship of W. O. Schumann, which relates thickness of air gap to dielectric strength of air, the author employs the value of field strength obtained above to calculate the apparent thickness of the air space between the charged sheets of supercalendered paper and obtained a value of 20μ. These results are related to the observation in an experiment in which a current passed through a pile of the paper between plate electrodes. The author briefly discusses the effect of the current through the pile of paper in terms of the Johnsen-Rahbek effect in semiconductors; he notes that the adhesion of charged sheets is greater for smooth than for rough sheets, because the charged surfaces are closer together in the former case. For the cases of charging sheets by rubbing and by passing them between rolls of different coverings, the author discusses the changes in potential with release of pressure on the pile of sheets and the distribution of charge through the pile, as well as the dissipation of charge. 1 table and 2 references. *Bulletin of the Institute of Paper Chemistry* 23, No. 7, March, 1953, pages 506-7. Das Papier is published by Eduard Roether Verlag, Liebigstrasse 24, Darmstadt, Germany.

* PICKING. J. Blokhuis. *Offset* 7, 25, December 13, 1952, pages 398-401 (in Dutch). The phenomenon of picking, the measurement of picking resistance and some research results are discussed. *Printing Abstracts* 8, 2, February, 1953, page 62. Offset is published at Weteringschans 86, Amsterdam—C, Holland.

* HOW CAN THE DUSTING OF PRINTING PAPERS BE PREVENTED? *Allgem. Papier-Rundschau* no. 24, December 22, 1952, pages 1063-1064 (in German). In a brief note, the author shows how the dusting tendency inherent in printing papers can be prevented or minimized by the correct furnish-selection, beating, sizing, fillers, coating agents, drying, and smooth, clean cylinders in contact with the paper web. *Bulletin of the Institute of Paper Chemistry* 23, No. 8, April, 1953, page 565. Allgemeine Papier-Rundschau is published at Fürstenbergerstr. 175, Frankfurt a.M. 4, Germany.

PAPER TESTING

* METHODS FOR THE MEASUREMENT OF THE ABSORPTIVE CAPACITY OF PAPER. B. I. Berezin. *Poligraf. Proizvodstvo,* September, 1948, pages 23-5. A critical review of such methods. The results of the known methods can be applied only to a particular type of paper. The method reported in the following paper can be applied to all types of paper.

A NEW METHOD FOR THE MEASUREMENT OF THE ABSORPTIVE CAPACITY OF PAPER. B. V. Deryagin and B. I. Berezin. *Ibid.* October, 1948, pages 22-6. The method depends upon the measurement of the volume of air displaced when the paper is saturated with paraffin oil or another liquid. Apparatus and procedure are described. Measurements can be made at normal pressure, reduced pressure, or *in vacuo*. Equations are given for the calculation of the specific pore surface and the specific paper surface from the results of the measurements described. Through *Chem. Zentr.*, 1949, I, page 382. *Chemical Abstracts* 46, No. 16, August 25, 1952, Column 7767. Poligraficheskoe Proizvodstvo, State Publishing House of the Council of Ministers of the U.S.S.R., Moscow, U.S.S.R.

* DEGREE OF ACCURACY IN PAPER TESTING. W. Brecht and L. Korner. *Papier, Darmstadt,* 6, (9/10), May 31, 1952, pages 161-9 (in German). The variability of the results of paper tests on one hand-made sulphite paper, one wood-free paper, one mechanical wood paper and one sulphate paper was determined, using both the Gauss formula and Lode's graphical method. The results of these tests (for surface weight, thickness, bursting strength, folding endurance, air permeability, breaking strength, elongation and through tear)

are tabulated. The high variability in the case of folding tests are due rather to the process itself than to instrumental or operational errors. If the same accuracy is required as is attainable from the mean of 10 measurements in the breaking strength test, then 20 determinations should be made in the case of bursting strength, 30 for air permeability, 40 for elongation and 200 for folding endurance. *Printing Abstracts* 7, No. 8, August, 1952, page 372. Das Papier is published at Eduard Roether Verlag, (16) Darmstadt, Liebigstr. 24, Germany.

INSTRUMENTATION STUDIES. LXXI. METHODS OF MEASURING THE MOISTURE CONTENT OF PAPER. A STUDY OF THE EFFECT OF MOISTURE CONTENT ON THE ELECTRICAL RESISTANCE OF PAPER AND AN EVALUATION OF THE HART MOISTURE METER AND THE MOISTURE REGISTER. K. W. Hardacker and R. D. Rawcliffe. *TAPPI* 35, 6, June, 1952, Pages 168-82A. A study has been made of the reliability of the Hart Moisture Meter and the Moisture Register as instruments for measuring the moisture content of paper. In addition, a general investigation of the variation of the electrical resistance of paper with moisture content has been carried out. Measurements were made to determine the effect on the resistance-moisture characteristic of variations in fiber furnish, beating, pH, dyes, size, density, basis weight, and ash content of the sheet. The effects of most of these variables were large enough to make it necessary to obtain a separate Hart Meter or Moisture Register calibration curve for each sheet. 6 tables. 23 figures, and 27 references. *Bulletin of the Institute of Paper Chemistry* 22, No. 11, July, 1952, Pages 846-7.

METHODS OF MEASURING MOISTURE CONTENT. *Paper-Maker* (London) 123, Mid-summer, 1952, pages 22 and 61 (2 pages). A new moisture tester is described, which is based on the measurement of the capacity of a condenser in which the paper to be tested forms the dielectric between the two plates. The hydrotester is of Swiss origin and was developed by Albert Mark of Zurich. *Bulletin of the Institute of Paper Chemistry* 23, No. 1, September, 1952, page 40.

*A NEW METHOD FOR TESTING THE SURFACE STRENGTH OF PAPER (BY MEANS OF A SCHOPPER TENSILE STRENGTH TESTER). A. Arnamo, I. Olsson and L. Pihl. *Svensk Papperstidn.* 55, No. 18, Sept. 30, 1952, pages 709-14 (in English, Swedish summary). A new method for testing the surface bonding strength (pick resistance) (I) of printing papers is described. The method measures the maximum force needed to split the surface layer of the paper with the aid of a cellophane tape at a fixed tension and speed by means of a Schopper tensile-strength tester. The readings obtained give a value of (I) of a tested paper and indicate its tendency for picking in a printing press. It was found that (I) is generally largest in the machine direction of the paper; hence, there is less risk for picking by printing the paper in this direction. The advantages and limitations of the new Graphic Arts Laboratory (GFL) procedure are mentioned; it is applicable to all papers, although the results obtained with coated papers must be judged cautiously. Dusting caused by loose fibers cannot be evaluated by this method. Various papers were classified according to their (I) by Dennison waxes and the new GFL method, and a good agreement was obtained. The new method has the advantage of characterizing the properties of different papers on a continuous scale; it also indicates the (I) of a paper in the different directions of the sheet. 2 tables, 7 figures, and 10 references. *Bulletin of the Institute of Paper Chemistry* 23, No. 3, November, 1952, pages 196-7. *Svensk Papperstidn.* is published at Svenska Kemistsamfundet, Stockholm, Sweden.

*A NEW DUST COMPENSATED GARDNER 75° GLOSS RECORDER. Richard S. Hunter. *Paper Mill News* 75, No. 42, October 18, 1952, pages 112 and 114-5; *American Paper Converter* 26, No. 10, October, 1952, pages 20, 22, 25, and 58.

The author describes a gloss recorder consisting of a photoelectric sensing unit which may be mounted over a moving web of paper and a sensitive electronic measuring unit which receives and records the photoelectric signals received from the sensing unit. The instrument is designed to measure 75° specular gloss according to TAPPI method T 480 m-51, which was originally developed for measuring the gloss of coated book paper but which is also useful for waxed, glassine, and printing papers in the same range of shininess. Possible applications of the instrument are outlined. A table listing the different methods of gloss measurement which have been standardized by technical organizations in this country is included. Gloss recorders similar to the present one, except for geometric design of the sensing unit, could be built to measure the gloss of bond or uncoated book papers, newsprint, and the like. These low-gloss papers are not satisfactorily differentiated with the 75° method. 2 tables, 2 figures, and 1 reference. *Bulletin of the Institute of Paper Chemistry* 23, No. 3, November, 1952, page 196. *Paper Mill News* is published by L. D. Post, Inc., 1440 Broadway, New York 18, N. Y. and *American Paper Converter*, by Howard Publishing Co., 111 W. Washington St., Chicago 2, Illinois.

* NBS INSTRUMENT TESTS STIFFNESS OF PAPER. *Chemical and Engineering News* 30, No. 45, November 10, 1952, page 4746. An instrument for measuring the stiffness of commercial papers has been developed by F. T. Carson and Vernon Worthington of the National Bureau of Standards. In the new device, the specimen is bent through a given angle, and its stiffness is measured by the torque in a wire suspension. By varying the width and length of the specimen and the angle through which it is bent, and by using supporting wires of different sizes, instruments of this type could be employed to test papers having a wide range of stiffness. NBS expects that the stiffness tester will prove useful in evaluating the stiffness of thin plastic sheet textiles, and similar materials.

* A WET RUB TESTER FOR MINERAL COATED SURFACES. B. W. Attwood. *Proceedings of Technical Section, British Paper and Board Makers' Association* 33, No. 3, December, 1952, pages 667-78; discussion, 679-81. The development of an empirical wet-rub tester and procedure for mineral coated paper and boxboard at St. Anne's Board Mills, England, is described, which converts the finger test into an objective one. A turntable rotated by a belt drive carries an aluminum dish in which the sample to be tested is secured. A pad of pencil-eraser rubber attached to an arm rests on the sheet being tested at a fixed and controllable pressure (250 g.). A fixed volume (40 ml.) of water at 65°-70° F. is poured over the sample and the motor started. The rubber pad is lowered onto the sheet and allowed to rub over the surface of the sample for 30 seconds, the water from the dish carrying the removed coating in the form of a suspension is collected and matched by eye (or photoelectric, nephelometric, etc. means) with a dilution of a standard coating slip. A set of three samples is tested after which the rubber pad is resurfaced. This procedure including the regrinding, requires about 12 minutes. The correlation with the finger test was found satisfactory. An improved model has just been completed and is coming into use. 5 tables, 8 figures, and 2 references. *Bull. of the Inst. of Paper Chemistry* 23, No. 8, April, 1953, pages 571-2. The Proceedings are published at St. Winifred's, Welcomes Road, Kenley, Surrey, England.

* A PAPER STIFFNESS TESTER AND THE EFFECT OF SEVERAL PAPERMAKING CONDITIONS ON THE STIFFNESS OF PAPER. J. Nankaku and Y. Yonekawa. *J. Japan. Tech. Assocn. Pulp, Paper Industry* 6, 1952, 398-410. A paper stiffness tester, devised by the authors, is described. It is based on the method of measuring the bending moment of a sheet of paper with the aid

of a pendulum, the movement of which was previously calculated. The bonded area of the fibers was found to be an important factor affecting stiffness of paper. The authors point out that the investigation of stiffness will contribute to the study of the microstructure of paper. *Chemical Abstracts* 47, 5, March 10, 1953, Column 2484. Journal of the Japanese Technical Association of the Pulp and Paper Industry is published at No. 2, Mitsubishi Naka-14 Building, Marunouchi, Tokyo, Japan.

*MOISTURE CONTENT AND pH VALUES. Ernst Mantzell. *Das Papier* 6, 1952, pages 126-7. The author reviews the more rapid methods for determining H_2O and pH (I) in paper. Special reference is made to the Fischer technique (*Chemical Abstracts* 29, 6532[9]), the results of which checked closely with those obtained by drying at 105°. M. developed a new, simple, and very rapid electrometric method for determining I, with an accuracy of 0.1. The surface of the test sheet is moistened slightly with 50% MeOH; after 5 min. the pH at the paper surface is measured by means of a special instrument consisting of a polished metallic Sb electrode and a reference HgCl electrode. A related direct-reading immersion apparatus with Sb and saturated HgCl electrodes can be used for measuring and controlling pH in mill liquors or suspensions without recourse to the mill lab. *Chemical Abstracts* 46, No. 17, September 10, 1952, Column 8369. Das Papier is published at Eduard Roether Verlag, (16) Darmstadt, Liebigstr. 24, Germany.

MEASUREMENT OF PAPER PROPERTIES IMPORTANT IN OFFSET PRINTING. Gordon C. Wheeler. *TAPPI* 36, No. 1, January, 1953, pages 112A-115A (4 pages). The way that paper properties affect offset printing and the means, both available and still undeveloped, by which these properties can be measured are discussed.

SOME NOTES ON OPACITY. William R. Willets and Louis E. Georgevits. *TAPPI*, 36, No. 1, January, 1953, pages 133A-137A (5 pages). Measurement of opacity and the effects on opacity of basic weight, filler, brightness, bulk and color are discussed. Show-through of the printed sheet involves not only opacity, but ink vehicle penetration, sheet color, light used for viewing, ink color, and difference in refractive index between pigment in the paper and ink vehicle. There is no direct correlation between contrast ratio and printing opacity and show-through.

THE SWORD HYGROSCOPE. *Modern Lithographer and Offset Printer* 49, No. 4, April, 1953, pages 22-24 (3 pages). The author discusses the effects of uneven moisture content on paper flatness, effect of temperature difference between paper and room, and the unequal reaction of paper to atmospheric changes. The Sword Hygroscope indicates differences between pressroom and paper relative humidity, thus enabling the printer to determine if conditioning is necessary.

INK — GENERAL

THE INK TRANSFER TO NEWSPRINT IN PRINTING UNDER DIFFERENT CONDITIONS. L. Pihl and I. Olsson. *Grafiska Forskningslaboratoriet* 28, February, 1952, Pages 44-57; *Svensk Papperstidn.* 55, No. 12, June 30, 1952, Pages 421-5 (First reference in Swedish, English summary. Second reference in English, Swedish summary.) The authors studied the influence of the printing pressure, the printing speed, and the ink viscosity with various amounts of ink present in the form on the ink transfer to newsprint (I). Increasing viscosity and speed were found to decrease (I), whereas higher printing pressures increase it. The experiments were carried out and interpreted by means of statistical methods (analysis of variance). 8 tables, 4 figures, and 3 references. *Bulletin of the Institute of Paper Chemistry* 22, No. 11, July, 1952, Pages 847-8. Photostats can be obtained of this article from the first-named reference in Swedish only.

*THE INK TRANSFER TO PAPER IN PRINTING. L. Pihl. *Svensk Papp-Tidn.* 55, No. 10, May 31, 1952, pages 358-62 (in English). In this article the general differences in ink transfer between various kinds of paper are discussed. An ink distribution number has been defined and has been used as a good indication of the ink transfer to papers for different amounts of ink on the form under constant printing conditions. Experimental work has been undertaken on the ink distribution when printing various papers. The influence of different printing conditions on the ink transfer has been studied but these results are to be described in later papers. *Printing Abstracts* 7, No. 8, August, 1952, page 374. Svensk Papperstidning is published at S. Blasieholmshamnen 4A, Stockholm, Sweden.

PHYSICAL ASPECTS. EXPERIMENTAL OBSERVATIONS ON THE PENETRATION OF OIL FROM INK INTO PAPER. A. H. Smith and R. R. Coupe. *Intern. Bull. for the Printing and Allied Trades* No. 61, 21-5; discussion, 25-7, July, 1952, (8 pages). The rate of varnish penetration from the ink into the paper has been observed by using a cathode-ray oscilloscope at the instant of ink application to measure the change in the amount of light scattered from the reverse side of the paper. The rate of penetration by this method was found to be dependent on the pigment concentration in the range of 3.5% to 17.5% (carbon black in mineral oil) in contrast to the previous conclusion of Voet and Brand that no further decrease in penetration resulted beyond 5% pigmentation. The ultimate depth of penetration has been determined by two methods: by finding the volume of unfilled voids using linseed oil to fill them, and by cross-sectioning the printed sheet using the polyethylene block method of Banks and Evans and then observing microscopically the depth of penetration of the iodine-stained varnish area. There was only moderate concurrence between the results of the two methods; theoretical reasoning is advanced to explain the differences. 1 table, 7 figures, and 5 references. *Bulletin of the Institute of Paper Chemistry* 23, No. 5, January, 1953, pages 349-50.

*GLOSS PRINTING INKS. John Pantin. *American Pressman* 62, 8: 18, 20 (July, 1952) (2 pages). An inkmaker discusses the problems of printing with gloss inks, including formulation of the ink, certain printing troubles, paper, and press conditions. Some papers are made especially for this type of work, because picking is one of the principal troubles encountered. A paper with a definite grain formation will pick more when printed against the grain. Wherever possible, the paper should be run with the grain at right angles to the gripper. Kromekote is a very good example of a paper well suited for gloss-ink printing, provided it is printed with the grain at right angles to the cylinder. *Bulletin of the Institute of Paper Chemistry* 22, No. 12, August, 1952, pages 937-8. American Pressman is published by International Printing Pressmen and Assistants' Union of North America, Pressmen's Home, Tenn.

PRINTING INKS OF TODAY. *Lithographers Journal* 37, No. 5, August, 1952, pages 16-17 and 49 (3 pages). This article is a brief summary of the past developments and present and future trends in printing ink uses and properties. Higher speed drying, new vehicles, scuff-resistance and special inks are mentioned.

COMMENTS ON LITHO INK GREASING THEORY. *American Ink Maker* 30, No. 10, October, 1952, page 43. The most important ink characteristic in determining greasing, tinting, and piling is the balance between hydrophilic and hydrophobic characteristics of the ink structure. Examples are given supporting this contention. They are the greater tendency of anastase as compared to rutile TiO_2 to produce inks that grease easily and the effect of acid number, affinity of pigment to the vehicle, alumina hydrate, and lecithin on this tendency.

CHARACTERISTICS OF OFFSET INKS. Herbert J. Wolfe. *Modern Lithography* 20, No. 11, November, 1952, pages 58-60 (3 pages). The requirements for litho inks (resistance to emulsification and bleeding, non-greasiness, high concentration, correct drying action and correct tack) to meet conditions of litho printing are reviewed. The properties of materials (pigments, vehicles, driers, and compounds) necessary to make ink fulfill these requirements are described. Also discussed were fountain solution, dry offset inks, and the photogelatin or collotype process and inks.

* GLOSS INKS. John Ondeck. *American Pressmen* 52, No. 7, 1952, pages 58-60. The paper requirements for good gloss ink printing are: the paper must have (1) an affinity for ink, (2) resistance to varnish permeability which would otherwise cause the ink to dry flat, (3) resistance to curl, and (4) sufficient strength so as not to tear out at the grippers in view of the strain imposed on the paper by the tackiness of the varnishes in the ink. Satisfactory printed results can be obtained with composition, coated or rubber rollers although it is the general consensus of opinion that composition rollers handle gloss inks best. If rubber rollers are used, they should be pre-treated with petrolatum or other greasy substances in order to saturate the surface. At least 200 impressions should be run before checking for shade. Gloss inks tend to appear weak in color immediately on printing, but darken and become stronger as the sheet dries. Maximum gloss can be obtained by running the job without heat, depending on a static neutralizer and spray gun to eliminate offset. If the tack of the ink must be reduced, kerosene should be used, but this should be done only after the press is warmed up and then only sparingly. With correct ink and good press conditions, it is possible to stack sheets 5,000 high, without rehandling and without danger of sticking or offset, when printing on a rotary four-color press. If the sheet is to be overprinted, the ink maker should be advised in order that necessary change in formulation may be made although this may result in a less glossy print. *American Ink Maker* 30, No. 12, December, 1952, pages 38 and 41. American Pressman is published by International Printing Pressmen and Assistants' Union of North America, Pressmen's Home, Tennessee.

A STUDY OF SOME INK PAPER RELATIONSHIPS. G. R. Sears, N. J. Beckman, J. O. Thompson, and I. L. Yurkowitz. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 59-69 (11 pages). A laboratory method for studying some ink-paper relationships previously described elsewhere has been modified to provide more precise control of experimental variables. The earlier method involved the nip-spreading of ink drops on paper by means of a steel cylinder rolling down a smooth inclined plane with subsequent analysis of the resulting elliptically shaped ink pattern of non-uniform density. In the modification described the ink drops have been replaced by uniform ink films of known thickness and a study has been made to determine the influence of nip pressure, paper-ink contact time, and thickness of the ink film on the division of ink between the paper specimen on the cylinder and the non-absorptive surface on the incline. The percentage of ink taken up by the paper from the film on the incline was found to be a function of the ink film thickness and reached a maximum at a film thickness which depended upon the nature of the paper, the nature of the ink, the nip pressure, and the time of contact between the ink and paper in the nip. Copies of the current Proceedings may be obtained from the Secretary, Dr. Paul Hartsuch, 334 S. Kensington Ave., LaGrange, Ill., for five dollars.

* ULTRASONIC TREATMENT INSTEAD OF GRINDING? AN EXAMPLE OF A NEW METHOD FOR THE MANUFACTURE OF PAINTS. E. Kroenberg. *Farbe u. Lack* 58, 1952, pages

263-4. Several oil varnishes and alkyd varnishes (100 g. each) were subjected to the action of a lab. ultrasonorator (sound input, 150 w./sq. cm., frequency 8000 kHz) for 10 minutes. The samples were heated up to 90° but showed no unfavorable change other than an increase in viscosity from 0 to 50%; some cloudy lacquers became clear. Alkyds and nitrocellulose-alkyd binders were next stirred up with pigments (zinc white, gas black, $BaSO_4$, org. pigments) in the usual grind ratios, and 100-g. samples were subjected to the ultra sonorator (sound input, 20 w./sq. cm., frequency 800 kHz) for 4 to 8 minutes. The treatment yielded perfect paints which yielded glossy films free of coarse particles. The possibilities of using ultrasound machines in place of roller mills or ball mills are discussed. Current data are considered insufficient. *Chemical Abstracts* 46, No. 20, October 25, 1952, Column 9855. Farbe und Lack is published at Am. Schriftgraben 41, Schliessfach 8, Postscheck, Hanover 123, Germany.

HOW THE NEW SYNTHETIC OFFSET INKS CAN HELP THE LITHO PRINTER. G. J. Ball. *British and Colonial Printer* 152, No. 2, January 9, 1953, pages 42 and 44 (2 pages). Synthetic varnishes can be prepared to disperse hydrophilic pigments in such a way that water-in-oil emulsions form only with difficulty, reducing emulsification. Higher pigment concentrations are possible making an ink of greater strength which allows a thinner layer of ink to be applied which then assists in drying and set-off prevention. Higher finish is also possible with these inks.

THE CARE AND STORAGE OF OFFSET INKS. Philip Duffy. *National Lithographer* 60, No. 2, February, 1953, page 26. Offset inks should not be stored in excessively hot or cold places since low temperatures cause inks to increase in body and become thixotropic, and high temperatures accelerate livering. Time improves ink quality since pigment becomes more thoroughly wetted by the vehicle. To avoid ink skin, ink in partially empty tins should be covered with paper, water , or varnish.

BETTER AND BETTER OFFSET INKS. W. R. Surgeon. *Graphic Arts Monthly* 25, No. 5, May, 1953, pages 96, 98 and 118 (3 pages). New developments in offset inks have resulted in improvements in finish and color density. Gel type inks set up fast, are low in tack, dry fast, and have a high degree of finish. The unique requirements for offset inks are resistance to over-emulsification, non-greasiness, bleed resistance, and resistance to pigment flocculation.

INK TESTING

* DETERMINATION OF THE DEGREE OF ACIDITY IN OFFSET COLORS. N. G. Goloshkevich and L. S. Sukhanova. *Poligraf. Proizvodstvo* 1948, No. 11, pages 23-4; *Chem. Zentr.*, 1949, page 1130. The method is independent of the color and the degree of dispersion of the pigment. A 10-g. sample is dissolved in 70 cc. of benzene in a porcelain dish. The pigment is separated by the addition of 80-90% alc. and filtered off. The solvent is distilled off from the filtrate until the volume is reduced to 30 cc. The residue is then evaporated. A 0.3-g. portion of the residue is dissolved in a neutral alc.-benzene mixt. (1:4) and titrated with 0.1 *N* alc. KOH with alkali blue. The acidity of 1 g. of varnish is calculated according to the formula: $K = a\ T/b$, where a is the amount of KOH in cc., b is the wt. of sample, and T is the titer of alc. KOH in mg. The degree of acidity of the pigment is calculated from the pigment: varnish ratio. This ratio is 1:0.3 for Cr pigments, 1:1.2 or 1:1.0 for lacquers, and 1:0.75 for Milori. *Chemical Abstracts* 46, No. 16, August 25, 1952, Column 7787. Poligraficheskoe Proizvodstvo, State Publishing House of the Council of Ministers of the U.S.S.R., Moscow, U.S.S.R.

* DETERMINATION OF ADHESIVENESS OF PRINTING INKS. Y. I. Zolotnitskii, B. N. Shakhkel'dyan, and E. S. Popkova. *Poligraf. Proizvodstvo* 11, 1951, pages 25-6; *Chem. Abstracts* 46, No. 10, May 25, 1952, Column 4811. The adhesion tendency is measured by allowing a small roller mounted on a slide attached to a spring balance to contact a wheel whose surface is coated with test material and which is rotated by a standard motor. The pull on the roller at a given velocity of the wheel is translated in terms of adhesiveness of the ink. Typical curves are presented. *Printing Abstracts* 7, No. 9, September, 1952, page 413. *Poligraficheskoe Proizvodstvo* is published at State Publishing House of the Council of Ministers of the U.S.S.R., Moscow, U.S.S.R.

THE BAND VISCOMETER. Harry H. Hull. *Journal of Colloid Science* 7, No. 3, June, 1952, Pages 316-22 (7 pages). The construction of a band viscometer is described. It consists of hardened stainless steel shear blocks thermally insulated from the mounting structure, a constant temperature water bath to control shear block temperature within $\pm$ 0.05° C., a timing unit, and a cellulose acetate tape. The advantages of this instrument are that the sample is subjected to a uniform shearing force throughout, the heat formed is dissipated efficiently, it operates at shear rates up to 10,000 reciprocal seconds, and it is easy to operate.

* MEASUREMENT OF THE COLOUR OF PRINTING INKS. A. Kornerup. *Ingeniøren* 60, *40*, 1951, pages 665-70; *Peint. Pig. Vernis* 28, *5*, 1952, page 322; *Rev. curr. Lit. Paint, Col., Varn.*, 25, *149*, September-October, 1952, page 538. The results are reported of measurements of the influence of the paper on the color of printing inks. Formulae are given for the prediction of the colour of pigment mixtures, tinting strength, hiding power, etc. *Printing Abstracts* 8, *2*, February, 1953, page 59. Ingeniøren is published at Ingeniørhuset, Vester Farimagsgade 29, Copenhagen (V), Denmark.

INSTRUMENTATION STUDIES. LXXVI. A STUDY OF PHOTOELECTRIC INSTRUMENTS FOR THE MEASUREMENT OF COLOR: REFLECTANCE AND TRANSMITTANCE. X. THE "COLOR EYE" (P.P.G.-I.D.L.) J. A. Van der Akker, L. R. Dearth, O. H. Olson and W. M. Shillcox. *TAPPI* 35, No. 11, November, 1952, pages 141A-158A (18 pages). The Color-Eye was briefly described and thoroughly evaluated. Its photometric accuracy was found to be poor. The instrument was not considered to be able to fill the needs of the paper industry for a filter colorimeter.

EVALUATING INK RESISTANCE TO DRY RUB. L. R. Ayers. *American Ink Maker* 30, No. 11, November, 1952, pages 29-31, 67 and 69 (5 pages). The measurement of dry rub resistance with specific reference to the packaging field is discussed. Instruments studied were the Sutherland, NPIRI, and Martinson rub testers. In the round robin series of tests, the following points were considered: 1. ease of operation, 2. speed of operation, 3. ease of interpretation, 4. correlation, 5. reaction of operators, 6. training of operators, 7. reproducibility, 8. flexibility, and 9. dependability. In general, all three testers tended to measure the same properties, but the severity of rubbing action varied for each. The Sutherland tester was considered to outrank the others in the above points. Possible future investigation would attempt to standardize the other variables than the instrument itself.

* DETAILS OF SUTHERLAND INK RUB TESTER. *American Boxmaker* 41, No. 12, December, 1952, pages 22-3 and 26; *American Paper Converter* 26, No. 12, December, 1952, pages 11-13. The tester is a motor-driven device for moving a weighted test specimen over a printed sample through an arc of 2.25 inches for a predetermined number of strokes; a stroke comprises one complete to- and fro-motion of the test weight. Two-pound and four-pound weights are

provided, each having four square inches of effective contact area. The following tests may be carried out with the instrument: dry rub, wet rub, wet bleed or transfer, wet smear, and functional rub. The procedures for each test are described briefly. The instrument was developed by Martin Galbraith. 2 illustrations. *Bulletin of the Institute of Paper Chemistry* 23, No. 5, January, 1953, page 347. American Boxmaker is published by Howard Publishing Company, 111 West Washington Street, Chicago 2, Ill.

• GLOSS EVALUATION OF MATERIALS. Richard S. Hunter. *ASTM Bulletin* no. 186, December, 1952, pages 48-55. The author discusses the reasons for the present growth of a variety of gloss-testing procedures. The geometric reflectances of different object surfaces vary greatly from one to another, and the corresponding appearance features used for visual ratings of gloss differ greatly. No single gloss-measurement procedure will ever serve all the needs of the different materials. As a consequence, different gloss scales involving different geometric aspects of light reflectance have been developed. Each provides numbers correlating with the glossy appearance of the specific types of surfaces to which it is applicable. The effective co-ordination of the needs of different technologies might reduce slightly the present number of established gloss-testing procedures. For certain types of glossy appearance, however, correlating methods of reflectance measurement do not exist, and new gloss-testing procedures are needed for these criteria which can at present not be measured. The trend will therefore be toward more, rather than fewer, of these procedures. To corroborate his reasoning, six established methods of gloss measurement, their major applications (paints, plastics, uncoated and glossy papers, sheen, and porcelain and high-gloss enamels), and important values are described, and the results are presented in tabular form. This is supplemented by a graph which illustrates roughly the differences between the gloss values of five of the six scales. 3 tables, 12 figures, and 22 references. *Bulletin of the Institute of Paper Chemistry*, 23, No. 5, January, 1953, pages 348-9. Bulletins of the American Society for Testing Materials can be obtained at 1916 Race Street, Philadelphia 3, Pennsylvania.

• CRITICAL OBSERVATIONS ON PRINTING-INK FINENESS-OF-GRIND GAUGES. D. Tollenaar. *Verfkroniek* 25, 1952, pages 133-4; *British Abstracts* B II, December, 1952, page 1283. An attempt is made to derive a distribution curve by counting the number of particles showing at the various depths along the gauge. It is possible to make observations, however, only at depths $<10\mu$, below which individual particles cannot be distinguished, so that the region in which the maximum number of particles of a printing ink would lie cannot be directly studied. *Printing Abstracts* 8, 4, April, 1953, page 163. Verfkroniek is published at Vereniging van Vernis-en Verffabrikanten in Nederland (V.V.V.F.) Keizersgracht 255, Amsterdam—C, Netherlands.

• PRINTING INK VEHICLES UNDER THE MICROSCOPE. Chr. Hostmann. *Allgem. Papier Rundschau* 1952, Pages 154-5. When a drop of an ink vehicle is placed between two glass plates, which are then rapidly separated, a characteristic (dendritic) structure (I) results, depending on the viscosity of the oil. Photomicrographs are given. I indicates the "pull" exerted on a paper surface and with experience furnishes a means for predicting the tackiness of the ink. E. G., a "strong" linseed oil varnish which produces a uniform pattern in I would probably tear nearly any paper owing to its extreme tackiness. *Chemical Abstracts* 46, No. 14, July 25, 1952, Column 6847. *Allgemeine Papier-Rundschau* is published at Fürstenbergstrasse 175, Frankfurt a.M. 4, Germany.

THE RHEOLOGY OF PRINTING INKS. II. TEMPERATURE CONTROL STUDIES IN THE ROTATIONAL VISCOMETER. George W. Lower, W. C. Walker and A. C. Zettlemoyer. *Journal of Colloid Science* 8, No. 1, February, 1953, pages 116-129 (15 pages). At low energy inputs, the viscometer bath itself is found to be effective in keeping the sample at constant temperature. In the medium range of 60,000-300,000 ergs/sq.cm/sec., the temperature can be controlled by lowering the bath temperature to beep the bob temperature constant. In the high range above 250,000 ergs./sq.cm./sec., the temperature can best be controlled by keeping the mean temperature of the cup and bob constant. These energy input ranges are given per square centimeter of bob surface so that they can be related to various precision rotational viscometers. Contrary to previous findings reported in the literature, ordinary mineral oils, vegetable oils, and litho varnishes show no evidence of thixotropy when measured by the new technique. Furthermore, the equilibrium flow curves of several oil-based printing inks were found to be linear above the low stress range. Therefore, well-defined values of the plastic viscosity and yield value can be reported for such printing inks.

LIGHTFASTNESS OF PRINTING INK PIGMENTS. T. E. Ludwig and S. R. Benson. *American Ink Maker* 31, No. 2, February, 1953, pages 34-37 (4 pages). The technique for measuring and some data on lightfastness of various pigments are given. Lightfastness was measured by exposing prints on coated paper for 70 and 200 hours on the Fade-Ometer. Inks of three different concentrations for each pigment were printed on the Vandercook No. 4 proving press. Tables are given showing the results for representative pigments of various types.

RHEOLOGY OF PRINTING INKS. I. A. C. Zettlemoyer. *American Ink Maker* 31, No. 2, February, 1953, pages 31-3, 63 and 65 (5 pages). Rheological terms and units are defined including viscosity, plastic flow, thixotropy, length, Newtonian flow, dilatency, and tack. Rheological properties are important in practice since they affect dispersion of pigment, distribution, transfer, and penetration of ink on the press and in the paper.

INK TRANSFER TO REPRESENTATIVE GROUPS OF PAPER. Ingemar Olsson and Lennart Pihl. *Svensk Papperstidning* 56, 6, March 31, 1953, pages 197-201; *Grafiska Forskningslaboratoriet* No. 31, January, 1953, 13-21 (9 pages) (in English and Swedish; second reference with English summary which is held in the LTF library). Cellophane, glassine, supercalendered paper, and coated art paper were printed on a cylinder press, and the ink transfer to the paper was studied with different printing pressures, speeds, amounts of ink on the form, and viscosities of the ink. For all materials it was found that an increase in pressure and a decrease of printing speed and viscosity of the ink caused a higher ink transfer. No clearly defined interaction between any of the independent variables could be established although it is possible that the experimental setup was not sufficiently sensitive for small variations. The percentage of ink which can be transferred from the form to the paper has a maximum at a certain value for the amount of ink on the form, which is characteristic for each type of paper. The ink transfer to cellophane and glassine paper is considerably smaller than to supercalendered paper. 3 tables and 4 figures. *Bulletin of the Institute of Paper Chemistry* 23, 9, May, 1953, page 661.

WHAT IS A "STANDARD PRINT" OF COLOR? John Baxter. *Modern Lithography* 21, No. 3, March, 1953, pages 40-41 (2 pages). A description of the British copper shell technique of preparing "standard prints" of inks. In use, a copper shell of known area is weighed

before and after impression and the ink film thickness determined from the known specific gravity of the ink.

INK DRYING

* THE INFLUENCE OF THE ADHESION OF PRINTING INKS ON THEIR PROPERTIES. N. G. Goloshkevich. *Poligraf. Proizvodstvo* 1948, No. 3, Pages 315-16; *Chem. Zentr.* 1949, Pages 315-16. The behavior of printing inks during the printing process is detd. entirely by their adhesive properties which are detd. in turn by the degree of polymerization of the varnish and the degree of moistness of the pigments. A very simple *lab. app. for the detn. of adhesive strength* is described. *Chemical Abstracts* 46, No. 14, July 25, 1952, Column 6847. Photocopies of this article may possibly be obtained from the U. S. Department of Agriculture Library, Washington 25, D. C.

INK DRYING PROBLEMS. A. C. Healey. *American Ink Maker* 27, No. 12, Pages 26-8 and 51 (4 pages), 1949. Poor drying of inks can be improved by adding driers or a synthetic resin varnish. Chalking may be due, among other causes, to pigments not being easily wetted or to the medium being too thin. It is most likely to occur on very absorbent papers. Other faults described are uneven drying, excessive driers, and drying on the press. *Chemical Abstracts* 46, No. 15, August 10, 1952, Column 7341.

* NEW DRIERS FROM 2-ETHYLHEXANOIC ACID. C. A. Klebsattel. *Ind. vernice* (Milan) 3, 1949, pages 13-14; *Chem. Zentr.* 1950, I, page 2418. The Co, Mn, Pb, Zn, and Ca salts of 2-ethylhexanoic acid represent a new type of drier which has certain advantages over the previously used naphthenates. The new products have a uniform compn., are not sensitive to oxidation, and are colorless. *Chemical Abstracts* 46, No. 22, November 25, 1952, Column 11706. Industria della vernice is published at Corso Matteotti 10, Milan, Italy.

* PAINT AND VARNISH CONTROL THROUGH THE MEDIUM OF ADDITIVES. *George W. Gregg. Official Digest Federation Paint and Varnish Production Clubs* No. 314, 1951, pages 186-8. The theories of drier activity are reviewed. Small additions of different specific materials will tend to eliminate skinning, livering, sagging, and low viscosity. *Chemical Abstracts* 46, No. 16, August 25, 1952, Column 7784. The Official Digest is published at 704 Weightman Bldg., 1524 Chestnut St., Philadelphia 2, Pa.

INK DRYING: GENERAL INTRODUCTION. W. H. Banks. *International Bulletin for the Printing Trade* 61, July, 1952, pages 14-15 (2 pages). The two classes of phenomena which govern the drying process as a whole—drying as determined by purely physical variables such as capillarity and drying by oxidation as affected by chemical processes—should be kept distinct. The first of these classes is discussed: the rate of the process of filtration and the equilibrium distribution. It is also necessary to elucidate the influences imposed by the printing process or materials on the process of oxidation. Further the measurement and definition of drying times on paper should be discussed. *Printing Abstracts* 7, No. 10, October, 1952, page 485.

PHYSICAL ASPECTS. SOME STUDIES ON THE PENETRATION OF VISCOUS OILS INTO POROUS PAPER. G. E. Carlsson and L. Pihl. *Intern. Bull. for the Printing and Allied Trades* No. 61, pages 16-21; discussion, 25-7, July, 1952, (9 pages). Two experimental methods which have been used to observe mineral oil penetration on newsprints are the Lucas-Washburn test for the height of rise of fluid in paper, and the oil-flotation test of Larocque. The conclusion reached by the authors on the first method was that oil viscosity and especially fiber orientation have an extremely great influence on the rate of rise of the oil in the paper, this being greatest when the paper strip is in the machine direction. The oil-flotation number is in-

fluenced by the viscosity and the surface tension of the oil as well as by the paper caliper squared. The height of rise in newsprint as compared with filter paper was found to vary very little in comparison with the differences between them which were shown by the determination of their oil-flotation numbers. Since it is quite time consuming to determine the height of rise and since the differences detected by this test are so small, the test does not seem to be of interest or value. The oil-flotation test is of value if the oil-flotation number is corrected with reference to the paper caliper. 10 tables and 8 figures. *Bulletin of the Institute of Paper Chemistry* 23, No. 5, January, 1953, page 349.

METHODS OF MEASURING THE DRYING OF INKS ON PAPER: THE I.G.T. DRYING TIME RECORDER. J. H. Monroy. *International Bulletin for the Printing Trade* 61, July, 1952, page 29; discussion, page 30. The recorder consists of a drum rotating at a rate of one revolution per 48 hours. The freshly printed strips are wrapped around the drum and fastened with spring clips. One side of a blank sheet of paper, to which ink is transferred, is fastened to the drum; the sheet is dragged along with the rotating drum. An arm supporting a steel ball with a diameter of 3.2 mm. moves to and fro parallel with the longitudinal axis of the drum. The pressure exerted by the ball is adjusted by means of a weight at values between 50 and 135 g. The blank sheet comes into contact with the printed strips only when pressed against them by the ball. This prevents blurring. The drying time is expressed by the distance between the top of the strip and the point at which transference of ink is discontinued. *Printing Abstracts* 7, No. 10, October, 1952, page 487.

CHEMICAL ASPECTS OF INK DRYING: SOME INVESTIGATIONS ON THE DRYING OF LITHOGRAPHIC INKS. G. E. Carlsson and L. Pihl. *International Bulletin for the Printing Trades* 61, July, 1952, pages 31-2; discussion 44-5 (4 pages). The following conditions seem to influence the drying time of lithographic inks on paper: (1) the emulsification tendency of the ink, (2) the hydrogen concentration of the fountain water, (3) the composition of the fountain water, especially the negative ions, (4) the hydrolysis of the driers by the fountain water, (5) the water content and other physical and chemical properties of the paper, (6) the oxygen supply during the drying process, and (7) the temperature. *Printing Abstracts* 7, No. 10, October, 1952, page 486.

CHEMICAL ASPECTS OF INK DRYING. ERRATIC DRYING OF OFFSET INKS. D. Tollenaar. *Intern. Bull. for the Printing and Allied Trades* No. 61, July, 1952, page 43. This study is an extension of the work by Reed on the retarding effect of the pH of the paper on the drying of offset inks. The pH of 40 commercial papers was tested; all coated papers were found to be alkaline and all uncoated papers were acid. The former gave shorter ink-drying times than the latter. When tested at 90% R.H., no appreciable difference in drying time was found with the alkaline papers, whereas the acid papers dried very slowly at the high humidity. Finally, the drying time of a group of specially prepared uncoated papers varying in pH from 3 to 9 was tested, and the same relation between pH and drying time was found to hold. The pH is concluded to play a predominant part in the drying of offset inks, although the exact mechanism is not quite clear. It may be that the adsorption of the metal ions of the siccatives is influenced by the pH. 1 diagram. *Bulletin of the Institute of Paper Chemistry* 23, No. 5, January, 1953, page 321.

DRYING OF LITHOGRAPHIC INKS. R. R. Coupe. *Modern Lithographer and Offset Printer* 48, No. 8, August, 1952, pages 177-9 (3 pages). The mechanism by which normal lithographic inks dry is briefly presented. Absorption of oil produces the initial set and oxidative

drying produces the hard final film. Reducing the ink promotes oil absorption. The pore structure of the paper is of vital importance in absorption. Dryers promote oxidative drying while acid papers, some fountain chemicals, low fountain pH, and high relative humidity reduces drying rate.

* ON SYNTHETIC PRINTING INKS. M. Hartmann. *Schweiz. graph. Mitt.* 71, No. 10, 1952, pages 497–8 (in German). The "drying" of "synthetic" (quick-drying) printing inks is more dependent on the nature of the paper on which it is printed than is the drying of linseed oil varnish inks, since the drying depends partly on the penetration of the medium into the paper. The inks are unsuitable for printing non-absorbent surfaces such as foil, plastics, etc. They should normally be used straight from the tin and where additions are essential, *small* amounts of the special thinners supplied should be used. Sprayers are unnecessary with these inks. A small amount of a paste drier can be added if hard drying of a number of colours over large areas is required. *Printing Abstracts* 7, No. 12, December, 1952, page 574. Schweizer Graphische Mitteilungen is published at Verlag Zollikofer & Co., St. Gallen, Switzerland.

HOW INKS DRY. Frederick A. Varron. *Interchemical Review* 12, No. 1, Spring, 1953, Pages 3-22 (20 pages). In the initial stage of the drying of an ink, there is gross penetration of the ink into the stock. This is followed by the separation of a portion of the vehicle from the bulk of the ink which results in the partial setting of the ink. Complete setting of the ink occurs when a more or less rigid gel structure is formed. The final phase of the drying process involves the solidification of this gel structure.

* LIGHT FASTNESS OF INKS. *American Ink Maker* 30, No. 7, July, 1952, Page 40. Difficulties confronting ink makers are described. Yellowing of the paper may make a blue ink appear green. Many inks (e.g., milori blue) on being exposed to sunlight exhibit a bronze effect, which soon disappears. When the degree of light fastness is judged, the criterion should not be the point at which a change of color begins, but the point at which the ink ceases to fulfill its function. Chrome yellows tend to darken when exposed to light. A mixture of inks all of first-class light-fastness may not itself be equally light-fast. Because of their small dyestuff content, such colors as pink, pale blue, pale green, and beige are particularly troublesome. Most difficult of all is red, because its fading is most noticeable. "The Non-Light-Fastness of Printing Inks." *Druckspiegel* 7, No. 2, Pages 65–8, 1952. Abstract No. 671 from *Printing Abstracts. Druckspiegel* is printed in Stuttgart, Germany.

* DISCOLORATION OF INK. F. J. M. Wunekus. *Verpakking* 5, 3, November, 1952, pages 137–8 (two pages) (in Dutch). It was concluded that blue fades in daylight, particularly if combined with a high temperature, a dry atmosphere and if in contact with cellulose film. Discoloration can also occur after some time and without light. Brown tends to revert to red because of the fading of the blue. Green fades only with ethyl alcohol or chlorine. Discoloration was stronger where printed matter had been in contact with cellulose film. *American Ink Maker* 31, No. 4, April, 1953, page 40. Through *Printing Abstracts* Number 23.

LITHOGRAPHY — GENERAL

THE INHIBITION OF DRYING OF LITHOGRAPHIC VARNISHES BY ACID AND SALT SOLUTIONS. R. R. Coupe. *International Bulletin for the Printing Trades* No. 61, July, 1952, pages 32-9 (8 pages). Phosphoric acid and phosphates, sulphuric acid and acid sulphates have marked inhibiting effects, which can be contrasted with the nitrates and chlorides which have little effect. Qualitative extraction experiments failed to show any difference between these groups, but we have shown that cobalt nitrate and chloride are themselves slightly better driers than the sulphate and phosphate. It may be that this difference is due to variations in the partitioning of the cobalt between the aqueous phase and the oil phase, and if this is so, the question is raised as to whether cobalt nitrate would be a useful addition to the fountain solution. Without further work, no general recommendation can be made, but it should be remembered that the effectiveness of cobalt nitrate as a drier is low and the partitioning would in any case be determined by the amount of cobalt already in the varnish. From the printing angle, there is no good reason why inorganic salts are required in the fountain solution, and our general conclusion is therefore that these should be omitted.

A PHOSPHATE FOR LACQUER CANS. W. Richards. *Tin Printer and Box Maker* 28, No. 331, August, 1952, pages 6-7 (2 pages). Author suggests the addition of ethylaniline phosphate to varnish and French polish to prevent the iron of the can from discoloring the varnish. He then proceeds to explain that aluminum is anodized and steel and tin are passivated by chromate and/or phosphate treatments. Lacquers are also used, but their method of application leads to the formation of air bubbles and the consequent non-protection of these areas. He suggests a double application to prevent this condition.

INTEGRATING-TYPE COLOR DENSITOMETER. Frank P. Herrnfeld. *Journal of the Society of Motion Picture and Television Engineers* 59, No. 3, September, 1952, pages 184-90 (7 pages). This color densitometer is for making diffuse density measurements in the blue, green, and red, as well as visual bands. This densitometer utilizes an integrating bar for gathering the light, therewith greatly increasing the sensitivity as compared to other methods presently used.

SHEET LACQUERING AND PRINTING. *Tin-Printer and Box Maker* 28, No. 33, October, 1952, pages 8-9 (2 pages) (From an article by H. Plinke, *Metalloberflache*, Vol. 5, No. 4, translated by J. I. Cordwell). Author points out sheet steel must be clean before it can be printed on. He recommends "Bonderising" (zinc phosphate) or acid pickling. Discusses application and type of lacquer films necessary. Claims many thin coatings are better than one thick one from a fabricating standpoint. He then goes into a brief discussion of the lithographic process and winds the article up by saying the background can be applied before or after the image is printed.

FORMULA FOR CLEANING DAMPENERS. *Modern Lithography* 20, No. 10, October, 1952, page 38 (From *Research Progress* No. 26). Formula for dampener wash producing fast cleaning with minimum foam in cleaning machines: Pluronic L-62, 10 av.oz.; Fluronic L-44, 10 av.oz.; Carbose, 5 av.oz.; Sodium Tripolyphosphate, 4 av.oz.; and Water, 100 fl.oz. For use, add one to two ounces of above per gallon of water in machine. Research Progress copies may be obtained from LTF, 131 East 39th Street, New York 16, for fifty cents to members, eighty-five cents to non-members.

NEW TREATMENT FOR CHROMIC DERMATITIS. *Modern Lithography* 20, No. 10, October, 1952, pages 45-6 (2 pages) (From Research Progress No. 26). New treatment using BAL (British Anti-Lewisite) for treatment of chromic dermatitis is described. Complete cure

possible if patient no longer contacts bichromates. Instructions for treatment will be given only to another physician by Dr. Harold N. Cole, Jr., Cole and Driver, Hanna Bldg., Cleveland, Ohio. Research Progress copies may be obtained from LTF, 131 E. 39th St., New York 16, for fifty cents to members, eighty-five cents to non-members.

HEALTH HAZARDS IN THE LITHO INDUSTRY. Alfred A. Jasser. *Lithographers Journal*, 37, No. 9, December, 1952, pages 18-20 (3 pages). The author classifies health hazards usually found in litho plants, namely, the hazards due to: 1. fire, 2. toxicity, 3. skin ailments. He cites the carelessness due both to plant management and employees in handling hazardous materials, and likewise storage problems of these materials. As a word of precaution, he states one should accept nothing unless properly labeled, one should be sure to read all labels, one should know what he is using and make sure that others do, too.

DAY TO DAY CARE OF AIR CONDITIONING SYSTEMS. B. Offen. *National Lithographer* 60, No. 2, February, 1953, pages 38-9 (2 pages). Preventive maintenance is described. It covers air filters, controls, air washer cooling systems, heating and cooling systems, mechanical features, and cleanliness.

QUALITY IMPROVEMENT IN OFFSET. Frank E. England. *National Lithographer* 60, No. 3, March, 1953, pages 26-27 (2 pages). The author describes steps taken to improve quality: 1. changed the grain on the plates, 2. changed ink formulations, 3. standardized fountain etch, 4. eliminated ink dopes, 5. changed blankets to match inks, 6. changed rollers to a softer grade, and 7. standardized on one line of deep-etch chemicals.

AIR CONDITIONING PROBLEMS IN LITHOGRAPHIC PLANTS. Charles F. King. *Inland Printer* 130, No. 6, March, 1953, pages 48-9, 52-3 and 85 (5 pages). Air conditioning for lithography has a great number of problems peculiar to it: 1. Temperature and humidity tolerances for the various parts of the plant are not known; 2. Generally, technical men capable of telling the air conditioning engineers what will be required are not available; and 3. Loads and load requirements for air conditioning platerooms and pressrooms are not well known. Various reasons why lithographers have been disappointed in the results of air conditioning are given.

HAND PROTECTED BY SILICONE OINTMENT — SILICOTE. *Photo-Engravers Bulletin* 42, No. 10, May, 1953, page 54. Rough, chapped, irritated skin, resulting from frequent exposure to water and other substances, may now be effectively prevented by use of new Silicote Skin Protective Ointment, now being introduced by Arnar-Stone Laboratories, Inc., Evanston, Ill. Silicote ointment was first described in a clinical report in the *J. of Investigative Dermatology*, September, 1951.

PLATES AND GRAINING

* THE NEGATIVE DISPERSE HYSTERESIS OF WETTING AND ITS IMPORTANCE FOR ELUCIDATION OF THE PHYSICOCHEMICAL NATURE OF THE PROCESSES OF METALLOLITHOGRAPHY. I. R. Klyachko. *Kolloid Zhur.* 9, 1947, pages 261-8. Cos θ (θ is contact angle) of H_2O on smooth zinc was 0.03, on grained zinc 0.37, on zinc treated with $KAl(SO_4)_2$ and HNO_3 0.02 and 0.35 (for smooth and grained surfaces, respectively), on zinc treated with stearic acid in C_6H_6—0.26 and —0.47 for the two surfaces, and on zinc pickled with various acid solutions (all containing phosphates) 0.08 to 0.37 and 0.53 to 1.0 for the two surfaces. Thus, graining improves wettability, coating with $NaZnPO_4$ improves it even more, but sensitization does not affect θ. *Chemical Abstracts* 47, 3, February 10, 1953, Column 1405. Kolloid Zhurnal is published at Izdatel'stvo Akademii Nauk S.S.S.R., Moscow, U.S.S.R.

* BICHROMATE GLUE. I. COMBINATION OF BICHROMATE AND GLUE. Haruo Irie and Shinichi Kikuchi. *J. Chem. Soc. Japan, Industrial Chem. Sect.* 54, 1951, 14-16. In order to see the influence of glues upon the photosensitivity of bichromate used in printing, the combination of $Cr(NO_3)_3$ and the gelatin subjected to various degrees of autoclaving was studied. The amount of Cr combination is large in the glue of greater photosensitivity or of smaller degree of decomposition. It is suggested that the combination takes place at —CO— and —NH— in the polypeptide chain of gelatin. *Chemical Abstracts* 47, 4, February 25, 1953, Column 1515. J. Chemical Society of Japan is published by the Society at No. 5 1-Chome, Surugadai Kanda, Chiyoda-ku, Tokyo, Japan.

* THE GRAINING OF ZINC PLATES. *Dutch Printing Standards Committee on Offset* 6, *21*, 1951, pages 381-3; *Z.D.A. Abstracts* 11, *2*, 1953, page 18. The mechanical and chemical cleaning of used zinc plates is discussed and the graining process is analysed and described with a view to obtaining standardized results. *Printing Abstracts* 8, 4, April 1953, page 182.

* A BELGIAN PATENT FOR GRAINING MARBLES. Haerinck and Urbain. *Graphica* 33, No. 6, July-August, 1952, page 45 (in French and Flemish). The marbles are made of a light alloy (aluminum 80-90, copper 2-4, silicon 4-6, magnesium 1-3, manganese 1, nickel 1.5-2.5 and zinc 2-4%) in such a way that the sand used remains firmly stuck to the outside during graining. *Printing Abstracts* 7, No. 11, November, 1952, page 550. *Graphica* is published at Palais d'Egmont, Petit Sablon, 8, Brussels, Belgium.

* PRINTING-PLATE RESISTS OF CINNAMIC ACID ESTERS OF POLYVINYL ALCOHOL AND CELLULOSE. *U. S. Patent 2,610,120.* L. M. Minsk, W. P. Van Deusen and E. M Robertson. *Chemical Abstracts* 47, 3, February 10, 1953, Column 992. Cinnamic acid esters of polyvinyl alcohol and cellulose, sensitized with nitro aryl compounds, form light-sensitive resin coatings suitable for printing-plate resists. A polyvinyl cinnamate resin, containing 84.6% by weight vinyl cinnamate, is prepared from 11 g. polyvinyl alcohol and 50 g. commercial grade cinnamoyl chloride in a yield of 31.5 g. Cellulose cinnamate may be similarly prepared. A typical resist lacquer contains 2.5 g. polyvinyl cinnamate, 25 cc. chlorobenzene, 75 cc. toluene, 0.25 g. of a nitro aryl compound. The nitro compound consists of a benzene or naphthalene nucleus with 1-3 nitro groups, and no free amino or acid groups, and no free amino or hydroxyl groups ortho to a nitro group. Mononitro compounds must also not have a formyl group ortho to the nitro group. There is no tendency for the cinnamate resist to dissolve during development, and coatings may be applied prior to use without being affected by non-ideal temperature and humidity conditions during storage. Etched zinc or copper halftones, grained zinc or aluminum plates, ungrained copper plates, zincated and bimetallic lithographic plates, as well as plates with a cellulose ester support may be employed with the cinnamic acid ester coatings.

* PHOTOLITHOGRAPHIC PLATES CONTAINING ACRYLIC ACID AMIDE POLYMER LAYERS. *British Patent 676,665.* Kalle and Company. *Photographic Abstracts* 33, Part 1, No. 129, 1953, page 44. Polymers and copolymers of acrylic acid amide, or its derivatives in which one or both the hydrogen atoms of the $—NH_2$ group may be substituted by an alkyl group, are claimed as colloid layers for the production of lithographic printing plates of uniform quality. The colloids may be sensitized by bichromates, diazo compounds or azido compounds, and in the last case metal printing plates which may be stored for long periods can be produced.

* VIEWS ON THE MECHANISM OF PITTING CORROSION OF ALUMINUM. P. M. Aziz. *Corrosion* 9, March, 1953, pages 85-90. Thermodynamic calculations were carried out to determine possible corrosion reactions of aluminum in neutral and near neutral aqueous solutions. Quantitative electrochemical factors determinating corrosion rate are discussed. Qualitative mechanism for initiation and propagation of a corrosion pit in aluminum is discussed. *Battelle Technical Review* 2, 6, June, 1953, page 256a. Corrosion is published by National Association of Corrosion Engineers, 919 Milam Building, Houston 2, Texas.

PRESS — CYLINDERS AND BLANKETS

THE UNROLLING OF OFFSET PRESSES. W. Lenaarts. I.G.T.Nieuws 6, No. 1, January, 1953, pages 12-17 (6 pages) (in Dutch). (English translation may be obtained for $6.06 as a photostat.) Two methods for measuring packing of plate and blanket on the offset press are described. They are: 1. measurement of bearer height above or below the blanket by means of a dial guage fixed to a bracket whose position is determined by two parallel bars resting against the blanket, and 2. measurement of cylinder radii by determining height above blanket surface of intersection of two flat plates fastened together at a fixed angle and resting tangentially on the blanket surface.

THE DAY-TO-DAY CARE OF OFFSET BLANKETS. E. Gurin. *National Lithographer* 60, No. 2, February, 1953, page 27. Extreme care is used by manufacturers to make the best lithographic blankets. The best fabric is chosen, very fine layers of rubber are laminated to make a more uniform and compact surface, then the blanket is vulcanized under scientific and well controlled procedure before it is ready to be used. Today more and more synthetic inks are being used, thus formulation of blankets has reached an important point of consideration and ink manufacturers and blanket manufacturers must work closer together. The pressman must care for the blankets by 1. remembering minimum pressure between plate and blankets, thus preventing embossing of blanket, minimum squeeze between blanket and impression cylinder, and 2. using a good wash in cleaning up blanket with the minimum amount of solvent necessary to do a good job. Recommended are petroleum solvents in boiling range of 190° F. to 265° F. if allowed by local fire regulations, or mineral spirits with boiling range between 300° and 400° F. Do not use turpentine, carbon disulfide or carbon tetrachloride on blankets. If glaze is bad, a lye solution can be used to remove it. A little daily care will prolong the life of your blankets.

PRESSES

* IMPRESSION LENGTH VARYING MEANS FOR ROTARY OFFSET PRINTING MACHINES. *U. S. Patent 2,619,901.* Charles W. Harrold. *Official Gazette* 665, No. 1, December 2, 1952, page 139. 1. A method of rotary offset printing, comprising producing during the printing portion of each cycle of the blanket cylinder and a cooperating cylinder a predetermined gradually increasing forward angular movement of the blanket cylinder relative to the forward angular movement of said cooperating cylinder to produce a predetermined difference in the length of the printed image as compared to the length thereof which would be produced without such relative increase in angular movement, and thereafter during the non-printing portion of the same cycle eliminating said relative increase in angular movement to return said cylinders to the relative angular positions which they occupied at the beginning of the cycle. 6. In a sheet fed rotary offset printing press, a printing unit comprising a plate cylinder, an impression cylinder and a blanket cylinder having a printing portion throughout one arc of its circumference and a non-printing portion throughout

the remaining arc of its circumference, cyclically operable driving connections for rotating one of said cylinders at constant speed and a coacting cylinder at a speed differing from said constant speed in one sense during the printing portion of the cycle of the coacting cylinders and in the opposite sense during the non-printing portion thereof sufficient to restore the cylinders to their initial phase relationship at the beginning of the cycle.

* DAMPENING MECHANISM FOR OFFSET-PRINTING PRESSES AND OTHER PRINTING PRESSES. *U.S. Patent 2,622,521.* Carl E. Larsen. *Official Gazette* 665, No. 4, December 23, 1952, page 1126. 1. In a dampening arrangement for offset-printing and other printing presses having a dampening roller by which during the printing a fluid is supplied to the printing cylinder, a ductor roller comprising a row of narrow dampening fluid carrying rollers extending along the length of said dampening roller, holders for each said roller, supporting means for said holders, said holders being individually securable to and movable on said supporting means, means for oscillating all said narrow rollers as a unit toward or away from said dampening roller for contact therewith, adjustable means coacting with said holders for said narrow rollers and said supporting means therefor, springs coacting with said adjustable means for controlling the pressure of said narrow rollers against said dampening roller in conjunction with said adjustable means, said adjustable means forming adjusting means for individually varying time of contact between each narrow roller and said dampening roller.

* APPARATUS FOR MOISTENING PRINTING PLATES IN PRINTING MACHINES. *U.S. Patent 2,622,520.* Max Hauser and Ernst Wagner. *Official Gazette* 665, No. 4, December 23, 1952, page 1126. In a moistening device for use with a rotary cylinder of a printing press carrying a printing plate, a sieve in the shape of a segmental cylindrical surface of a length approximating the width of the plate to be moistened, a liquid container, means for oscillating said sieve on an axis corresponding to the axis of the cylindrical surface and parallel to the printing cylinder, said means being adapted to oscillate the sieve in timed relation to the printing cylinder rotation between one position in which the sieve is submerged in said liquid, and another in which it is withdrawn from the liquid, and a series of compressed air nozzles arranged along the adjacent to the inner surface of said sieve and directed towards said printing plate.

THE USE OF LOW MOLECULAR WEIGHT ALCOHOLS IN LITHOGRAPHIC FOUNTAIN SOLUTIONS. L. E. Martinson. *Modern Lithography* 20, No. 8, August, 1952, Page 51. Low molecular weight alcohols may be added to fountain solution to reduce ink emulsification. Five to 50% by volume of alcohol is used if the ink contains no alcohol-soluble dyes. Its effect is to lower the surface tension between the ink and water, thereby decreasing the stability of that emulsion.

HYDRAULIC PLATE CLAMP FOR SMALL OFFSET PRESSES. R. Halstead. *Printing Equipment Engineer* 83, No. 1, October, 1952, page 30. (Communication #1504, Kodak Research Laboratories). For holding the plate at the ends, this device depends on the pressure against the plate that is developed by hydraulic pressure within a pod. Pressure is applied by means of screws pressing against bellows.

APPLICATION OF PRESSURE AND VACUUM TO LITHOGRAPHIC PRESSES. G. Herman Brandt. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 37-46 (10 pages). Air pressure and vacuum used for controlling sheets through lithographic presses generally is produced by pumps of the rotary vane type. Lines leading from these pumps should be of optimum size and contain a minimum of constrictions caused by fittings and valves. A consideration of

the factors affecting volume of air delivered at given pressures is dependent upon the configuration of the line and elements it contains. Factors affecting the vacuum at a given point are similar. The size of terminal openings in air and vacuum lines determines the effectiveness with which sheets are controlled in feeders and deliveries. The relationship of these openings bears a direct relationship to the pump and line. The force exerted by air jets is proportional to pressure and size. The ability of a vacuum sucker to attract a sheet is more dependent upon line size than upon degree of vacuum.

CLEANING LITHOGRAPH ROLLS. John A. Hinckley. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 47-50 (4 pages). The removal of ink from rollers depends upon two factors, the degree to which the ink has been transferred to the solvent at equilibrium in a static system, and the rate at which the equilibrium is approached. Kerosene and similar solvents are deficient in both respects. Amide condensate additives have been developed that allow the wash system to pass smoothly over the critical moment when the ink carrying oils are removed from the rolls.

EMULSIFYING OF INK. Theodore Makarius. *Modern Lithography* 21, No. 1, January, 1953, pages 63 and 115 (2 pages). Emulsification of ink can be detected by noting its tendency to pile on the distributing rollers. Shine, smoothness, and film thickness change. A film thickness gauge may be used. Spare forms and paper lint promote emulsification due to slow ink replacement and breakdown of ink structure. The additions of solid printing areas in waste areas of the form, the addition of thin varnish to the rollers, and washing some ink from the rollers are means suggested to minimize emulsification.

DAY TO DAY CARE OF ROLLERS. E. Byron Davis. *National Lithographer* 60, No. 2, February, 1953, page 31. Proper care of rollers will eliminate time losses in press shut downs. All plants should have someone responsible for proper care of rollers, and have a place where this person can properly do his work in caring for the rollers. He should not only have space available, but supplies like lye, cleaning fluids, brushes, fine steel wool to use in caring for the rollers. All roller manufacturers issue recommended instructions for their rollers, and these should be displayed in this roller maintenance area. A little time spent on the rollers at regular intervals will prolong the life of them. Rollers should be rotated periodically, inspected so as to catch any imperfections before serious damage is done.

DAY-TO-DAY PRESS CARE, Roy P. Tyler. *National Lithographer* 60, No. 2, February, 1953, pages 32-4 (3 pages). Machinery to operate efficiently must be properly maintained. Efficiency of operation results in greater production, thus maintenance is all important. Day-to-day care will result in less loss of time, and will prolong the life of the press. Worn parts should be watched for and replaced immediately, lubrication should be performed faithfully and properly, and cleanliness should be practiced. Discussion of these major categories of press maintenance is made, and if they are put into practice, the productivity of your machine will rise.

GEAR STREAKS. James McNamara. *National Lithographer* 60, No. 3, March, 1953, pages 38-39 (2 pages). Function of gears in presses is to provide means for maintaining uniform surface speeds, thus enabling a clean, sharp, undisturbed image to reproduce. Gear streaks usually show on the blanket first, and may be caused by factors other than gears. Causes of streaks are discussed and the methods of correction are suggested. Proper maintenance and lubrication of all moving parts as well as gears will go a long way in prevention of gear streaks.

GRAPHIC ARTS — GENERAL

AT LONG LAST. *Chemical and Engineering News* 30, No. 29, July 21, 1952, Page 2970. The second revision and codification of the patent laws in the nation's history awaits only the President's signature to become law. The last major revision took place in 1870. Principal purpose of the bill is the codification of the patent laws (Title 35, United States Code). This includes simplification and clarification of the language and arrangement and elimination of obsolete and redundant provisions. In addition, there are some changes and innovations. One change, defining the term "process", clarifies the patentability of new uses of known materials; another allows addition or deletion of names of inventors in patents and patent applications to correct mistakes; a third sets forth the principles of contributory infringement, scope of which has been in doubt because of various court decisions.

PROBLEM IN ADHERENCE. *Chemical Week* 71, No. 4, July 26, 1952, Pages 39 and 41 (2 pages). A discussion of the difficulties of printing on polyethylene. Basically, the chemical inertness of polyethylene causes the trouble, and in addition, the flexibility of the plastic requires a flexible ink film. Methods of overcoming these difficulties include coating the polyethylene film, pre-print treating the film to alter it chemically, and "electronic rearrangement of the molecules" (not explained). Details of these methods are hard to uncover, but a general discussion is given including IPI's "Anilox" method, treatment with chlorine before printing, Traver Corporation's "Loxtite" and others. However, most companies admit they haven't yet developed a thoroughly satisfactory system.

*STATIC ELECTRICITY, THE PRINTER'S GREMLIN. J. A. S. Morrison. *British Printer* 65, No. 385, July-August, 1952 Pages 53-5 (3 pages). The author explains in simple terms how static electricity in printing is created, why it persists, the conditions necessary for its natural discharge, and the methods for discharging it scientifically. *Bulletin of the Institute of Paper Chemistry* 22, No. 12, August, 1952, page 944. British Printer is published at 2, 3, & 4 Cockspur Street, London, S.W. 1, England.

INDUSTRIAL MAGNIFIERS—HOW HOW TO CHOOSE AND USE THEM. *Lithographers Journal* 37, No. 6, September, 1952, pages 12-13 and 37 (3 pages). Reprinted from Bausch and Lomb Optical Company's booklet. A discussion of industrial magnifiers, including the working distance, magnification, field of view, depth of field, and lens aberrations.

*COMPOSITION FOR RENDERING PRINTING ROLLERS NONMELTABLE. *U. S. Patent 2,598,761.* Lloyd W. Conklin. *Chemical Abstracts* 46, No. 19, October 10, 1952, Column 9322. A composition for coating glue-glycerol printing rollers consists of 1 part hexamethylenetetramine, 6 parts lanolin, and 2 parts glycerol. Any grease m. below 90° F. may be used in place of lanolin, or any alc. b. above 250° F. may be used instead of glycerol. The coated roller is stored for 30 days at 90° F. and a relative humidity of 55% to allow the coating to penetrate the glue-glycerol material and form a nonmeltable shell.

*STYRENE LACQUER. *U. S. Patent 2,603,618.* Bernard J. Cagan, Walter Burroughs and Robert Silverstein. *Chemical Abstracts* 46, No. 20, October 25, 1952, Columns 9748-9. A lacquer, consisting of a polystyrene resin (I) of 5,000-20,000 mol. wt., a plasticizer (II), and isophorone and diethylene glycol monobutyl ether acetate (III), either pigmented or non-pigmented, is suitable for forming *decalcomanias* which can be transferred to styrene plastic objects by the application of heat. A suitable compn. was I 255, II 45, isophorone 300, and III 150 parts. Suitable II are butyl phthalyl butyl glycollate.

HOW THE LORD BALTIMORE PRESS IS TRAINING MEN TO MEET WORKER SHORTAGES. *Modern Lithography* 20, No. 10, October, 1952, pages 36-7 (2 pages). The Lord Baltimore Press, with the use of LTF instructional materials, has initiated a long range on-the-job training program for offset workers, beginning with pressroom employees in the lithograph department and extending eventually to employees in all manufacturing departments. The purpose is to provide the reasons for operating practices and as a final test, the students are required to demonstrate what they have learned in the pressroom.

CARBON TETRACHLORIDE (CCl_4). Axel Lundbye. *Printing Equipment Engineer* 83, No. 2, November, 1952, page 43. Author points out the toxicity of carbon tetrachloride, a chemical used generally in industry as a non-inflammable solvent. In addition to a description of its properties, he gives several examples of the ill effects of improper use and lists the symptoms of poisoning by the chemical and treatment with precautions for its use.

THE APPLICATION OF QUALITY CONTROL TECHNIQUES IN THE GRAPHIC ARTS. Donald Macaulay. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 81-92 (12 pages). The fundamentals behind the approach to statistical quality control will be discussed, with observations on the installation and problems of installing the system. Two demonstrations of the use of control techniques in analyzing raw materials and two demonstrations showing the application of quality control techniques in the press room, will be shown.

*ANTI-SET-OFF PRACTICE. GRANULAR SEPARATION BY DRY SPRAY. F. B. P. Rambridge. *British Printer* 65, January-February, 1953, pages 36-38. Discusses importance of particle size, necessary characteristics of powders, and range of dry granule sizes. Photographs of equipment. *Battelle Technical Review* 2, No. 4, April, 1953, page 189a. British Printer is published at 2, 3 and 4 Cockspur Street, London, S. W. 1, England.

NEW ERA FOR WORK SIMPLIFICATION. Lillian Stemp. *Inland Printer* 131, No. 2, May, 1953, pages 33-35 (3 pages). Examples are given of how Work Simplification, a program for finding easier and better ways of doing a job in a print shop, has benefited production.

PLASTIC APRONS CAN BE DANGEROUS. *Laboratory* 22, No. 4, 1953, page 119. The article states that the static electricity charge in plastic aprons may constitute an explosion hazard when worn in areas where there are flammable vapors.

PROCESSES — GENERAL

HOW GOOD IS DRY OFFSET? Wilson B. Fiske. *Share Your Knowledge Review* 34, No. 2, November, 1952, pages 20-1 (2 pages). A brief report of the experiences with dry offset platemaking by B. Sears of Graphic Arts Corp. He believes the process shows promise for wider usage.

DRY OFFSET PRINTING ON THE OFFSET DUPLICATOR. Harvey F. George. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 23-29 (7 pages). The process of printing from a direct reading relief plate by offsetting to a rubber blanket has been called dry offset, letterpress or relief offset and high etch offset. A substantial amount of this is now done on a small offset press, the Davidson Dual Duplicator. Photoengraved plates on .032 zinc and etched no more than .015 are used with standard soft rubber ink rollers. The image areas of the paper may be simultaneously embossed by use of two identical plates. Simplified equipment and standard pro-

cedures have been worked out. Copies of the current Proceedings may be obtained from the Secretary, Dr. Paul Hartsuch, 334 S. Kensington Ave., La-Grange, Ill., for five dollars.

HIGH ETCH DRY OFFSET. Ernest F. Trotter, *Printing Magazine* 77, No. 1, January, 1953, pages 84-5 (2 pages). The progress of high-etch dry offset process is discussed with Sam Chernoble of The Comet Press, Inc. Mr. Chernoble, who has been working with the process for five years, gives his opinion of the advantages and present limitations in dry-offset.

* XEROX CAMERA AND DUPLICATING PROCESS. *American Documentation* 2, No. 2, Spring (April), 1951, page 115. The Xerox Duplicating Camera and associated equipment, manufactured by The Haloid Company, Rochester, New York, is illustrated and briefly described. Engineering drawings, letters, charts, etc., can be copied onto a paper master by Xerography in less than a minute. Xerography is a dry, direct-positive reproduction process, in which a black resinous powder is poured over the electrostatic surface of a specially treated plate to make the paper master copy. The paper master copy is then placed on the cylinder of a Multilith process duplicator, and multiple copies are run off. The same Xerographic plate may be used many times. The Xerox Camera has a fixed-focus wide-angle lens which makes it possible to copy originals having images on both sides onto a paper master. Paper master copies are then processed in the Xerox Copier. The powdered image areas on the surface are made permanent by placing them in the fusing unit for a few seconds. The complete equipment comprises three units, each of which can be plugged into an a-c outlet. *Kodak Research Labs Monthly Abstract Bulletin* 38, No. 8, August, 1952, page 381. American Documentation is published by American Documentation Institute, 1719 North Street, N.W., Washington 6, D. C.

* XEROGRAPHY. John B. Hartnett. *Print* 7, No. 5, November, 1952, pages 9-15. Xerography, an electro-chemical method of dry printing is described. The basic steps of the process are: the creation of an electrical charge on the surface of a plate composed of a metal foil coated with a photoconductive insulating material; the exposure of the plate in a camera, under an enlarger, or in a contact printing frame to create a positively charged image; the application of a developing powder across the plate, the particles of which adhere to the image; the transfer of the resultant positive mirror-reversed image to a sheet of paper by passing it through a discharge machine; and the heating of the resultant direct positive print in order to fuse the developer to the paper. The last three steps of this process have been incorporated into a machine which prints at a speed of 1200 web-feet per minute and is sufficiently light for duplicating work in the office and the laboratory. Multicolor reproduction is possible. No critical defense materials such as film, chemicals, sensitized materials, or aluminum plates are needed for xerography, and almost any paper stock is suitable. 11 figures and 1 xerography-produced specimen. *Bulletin of the Institute of Paper Chemistry* 23, No. 6, February, 1953, page 435. Print is published by William Edwin Rudge, Publisher, Inc., P. O. Box 348, Hartsdale, N. Y.

XEROGRAPHY. William T. Reid. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 93-5 (3 pages). A brief review of the accomplishments in xerography during 1951 shows how this process has overcome some of its earlier limitations and taken its place in the printing industry.

* ANILINE—ADOLESCENT OF THE GRAPHIC ARTS. D. E. Tuttle and Stewart Hoaglund. *Print* 7, No. 5, November, 1952, pages 1-8. Possibilities for the application of the aniline printing process (or "flexographic process", new name as adopted by the Packaging In-

stitute) seem inexhaustible because of its versatility. The authors give a general description of the process, including equipment, and compare it with letterpress, lithography, and rotary gravure printing. The packaging industry claims the most novel recent applications of aniline printing, but its use outside this industry is growing; some of these applications are described. 17 figures and 2 packaging samples. *Bulletin of the Institute of Paper Chemistry* 23, No. 6, February, 1953, page 435. Print is published by Wm. E. Rudge, Publisher, Inc., P. O. Box 348, Hartsdale, N. Y.

ANILINE OR ROTOGRAVURE PROCESSES? Frank E. Broughton. *Share Your Knowledge Review* 34, 5, February, 1953, pages 16-18 (3 pages); reprint from *American Pressman*, November, 1952. Advantages and disadvantages of the two processes are discussed. Rotogravure drawbacks: 1. cost of cylinders, 2. inflexibility of printed size, 3. ease of damaging cylinder, 4. fire danger from solvents, and 5. higher equipment cost. Aniline drawbacks: 1. higher ink cost, 2. more restricted selection of inks, 3. chances for slippage between plates, 4. greater makeready time, 5. shorter plate life, 6. only coarse screen suitable, 7. poorer ink control, and 8. poor light fastness of inks.

*PORTABLE ELECTROPHOTOGRAPHIC POWDER IMAGE TRANSFER MECHANISM. *U. S. Patent 2,626,865.* Clyde R. Mayo and Robert W. Benson. *Official Gazette* 666, No. 4, January 27, 1953, page 1059. 1. A portable electrophotographic powder-image transfer mechanism comprising a carriage movable over a sheet of transfer material and including rolls coextensive in length with the width of the carriage and having continuous contact with the transfer material perpendicularly of their path of movement, and electrical discharge means comprising corona discharge wires connected to an external high voltage source and mounted on said carriage above the lowermost portions of the carriage entirely between said rolls whereby the electrical discharge means is movable in a selected path and over any portion of a sheet to which a powder-image is to be transferred whereby the sheet of transfer material is engaged and held throughout its width by said rolls.

*METHOD OF PRODUCING IMAGES ON RIGID SURFACES. *U.S. Patent 2,637,651.* H. E. Copley. *Official Gazette* 670, No. 1, May 5, 1953, page 240. 1. The method which comprises transferring a powder image from an electrophotographic plate to a flexible transfer sheet by means of an electric charge applied by corona discharge to the transfer sheet while the latter is in contact with the plate, then transferring the powder image from said flexible transfer sheet to the rigid surface of a printing element by means of an electric charge applied by corona discharge to the transfer sheet while the latter is in contact with the printing element, and fixing the powder image on said printing element.

A NEW PRINTING METHOD W. Richards. *Tin Printer and Box Maker* 29, 338, March, 1953, pages 6 and 8 (2 pages). A brief review of Ferromagnetography and its possible application to the printing of tinplate. Also discussed are surface scratches, dents, slurs, and glances produced in the handling of tinplate.

FERROGRAPHY. Ralph B. Atkinson and Steven G. Ellis. *Photographic Engineering* 4, No. 1, 1953, pages 18-21 (4 pages). Ferrography is the name given to the process of magnetic recording and printing of visual information. In its most obvious form this information might be a picture, but it might also be printed matter, telemetering data, or any information which can be represented as an electrical signal. It is possible to record the information at one point and reproduce it immediately at the same

point or at a distance, via wire or radio, or to store it and reproduce it later. Multiple copies can be made, and they may be printed in one or more colors.

THERMOFAX. R. H. Carruthers. *American Documentation*, 1, No. 4, October, 1950, Pages 212-13 (2 pages). A rapid, simple, contact process, Thermofax, of producing black-on-white copies of one- or two-sided originals has been developed by Minnesota Mining and Manufacturing Company, St. Paul, Minnesota. Infrared rays from an electric tube that traverses the surface of the area to be copied produce the image. Exposure is controlled by varying the speed of the lamp, not its intensity. Any original containing written or printed characters or symbols that are impervious to infrared radiation, i.e., printer's ink, typewriter ink, pencil marks, etc., can be copied. Letters or symbols made by ordinary writing inks and aniline dye inks will not reproduce. Disadvantages of Thermofax are its thin texture and tendency to curl, the facts that signatures on letters will not reproduce, that the individual letters tend to thicken and fill in, that very small type will not reproduce (newspaper type is the smallest size that can be reproduced satisfactorily). The paper used costs about the same as that for Photostats—five cents a sheet—but operating costs are relatively less. The manufacturer is experimenting with a heavier paper that will be easier to handle than the present thin stock used. No diagrams or pictures are included in the article. *Monthly Abstract Bulletin* 38, No. 5, May, 1952, page 256. American Documentation is published by American Documentation Institute, 1719 North Street, N., Washington 6, D. C.

* RECORDING PAPER. *U.S. Patent Application 790,115.* A. Murray. *Official Gazette* 652, No. 2, November 13, 1951, page 617; *Chemical Abstracts* 46, No. 17, September 10, 1952, Column 8294. A printing process employs black paper coated with palmitic acid alone or with 20% by weight $Al(OH)_3$, thick enough to appear white but thin enough to soak into the paper; a heat image projected on the material causes the wax to melt (at 100-200° F.) and an immediate print is given. *Printing Abstracts* 7, No. 11, November, 1952, page 525.

THE TECHNICAL BACKGROUND OF THE COLLOTYPE PROCESS. P. C. Smethurst. *Photographic Journal* 92B, July-August, 1952, pages 115-23 (9 pages). The mechanism of image formation in the collotype process as used for facsimile reproductions is outlined in terms of the physical behaviour of the gelatine matrix, and the factors requiring control in the practical working of the process are described.

* PRINTING PROCESS WHEREIN AN ALKALINE SUBSTANCE PASSING THROUGH STENCIL OPENINGS EFFECTS COUPLING OF AN AZO DYE IN SITU. *U. S. Patent 2,597,306.* Samuel E. Eaton and Robert W. Fabian. *Chemical Abstracts* 46, No. 18, September 25, 1952, Column 8556. Instantaneous coupling of azo dyes is accomplished in a printing process. A paper sheet impregnated with a light-sensitive diazo compound, a coupler, and an acid as inhibitor is exposed through a stencil to NH_3 or Na_2CO_3-soln.; this causes coupling of the exposed sections. The developed dye may be fixed with NH_3 or with heat.

* MULTICOLOR PROOF PRESS. *U.S. Patent 2,610,581.* David D. Vandercook, Edw. O. Vandercook and Raymond L. Pelland. *Official Gazette* 662, No. 3, September, 1952, pages 736-7. 5. In a printing press having a bed, a carriage reciprocably movable on said bed, an inking roller journaled on said carriage and means for applying ink to said inking roller at one position of said carriage, the improvement of a driving chain positioned along said bed, power means for moving said chain, a sprocket journaled on said carriage and engageable with said chain, means connecting said sprocket and said inking roller in

driving relation, and means for energizing said power means when said carriage is located at said one position, whereby said inking roller is driven by said chain in said inking position and rolls on said chain as a rack when said carriage traverses said bed.

• METHOD OF PRINTING. *U.S. Patent 2,614,493.* George R. Brodie. *Official Gazette* 663, No. 3, October 21, 1952, page 713. 1. The method of printing on sheet material in which the application of the ink thereon is by plate and impression cylinders which comprises heating the sheet material, applying to the heated sheet material the impression of an ink comprising a coloring agent and a vehicle containing a thickening agent and a solvent therefor having a sufficiently low vapor pressure to make the ink stable under normal press room printing conditions but capable of rapid vaporization solely by the application of heat, the heating of the sheet material prior to the application of the ink impression being to an elevated temperature below the point at which discoloration thereof usually occurs but to a temperature sufficiently high that the heat still carried by the sheet material at the time of the application of the ink impression thereto is sufficient to rapidly vaporize the solvent from the ink and leave a dry impression, and cooling the plate cylinder to prevent its overheating and the setting-up of the ink thereon.

• PROCESS FOR MAKING COLORED ALUMINUM. *U.S. Patent 2,614,912.* Cyril M. Rice. *Official Gazette* 663, No. 3, October 21, 1952, page 833. 1. The method of decorating anodized aluminum sheet material which comprises printing on the anodized surface of the aluminum a design in an ink comprising a dye dissolved in a film-forming ink vehicle, dyeing the unprinted portions of the surface by immersing the surface in a dye solution which does not dissolve the ink vehicle, sealing the surface by treatment with boiling water and dissolving away the remaining ink vehicle.

• ELECTRIC HEAT SPEEDS PRINTING PRODUCTION. Charles C. Doyle. *Boxboard Containers* 70, No. 718, October, 1952, pages 47 and 82 (2 pages). Electrically heated units can be employed to accelerate the drying of printing inks while, at the same time, reducing the amount of spray normally used in pressrooms. A radiant reflector unit using General Electric Calrod heaters is manufactured by the J. E. Doyle Co. for the purpose. The attachment is reported to eliminate offsetting and static electricity. An installation on a Miehle press is illustrated and described. 3 illustrations. *Bulletin of the Institute of Paper Chemistry* 23, No. 3, November, 1952, page 173. Boxboard Containers is published by Haywood Publishing Co., 22 E. Huron, Chicago 11, Ill.

PRINTING ON POLYETHYLENE FILM. *Printing Equipment Engineer* 83, No. 2, November, 1952, page 33. A brief description of the troubles encountered in printing on polyethylene film. While details on the various printing methods used are almost impossible to uncover, the general procedures believed to be used by several companies are given.

NEW KODAK SPEEDY PHOTOCOPYING PROCEDURE. *Photographic Engineering* 3, No. 2, 1952, page 100. According to press reports, Eastman Kodak Company, Rochester, New York, have developed a new experimental photographic copying system for the speedy production of photo copies in less than one minute. Principal feature of the system is the use of an emulsion, which although light sensitive, acts slowly enough that it is not affected by ordinary room lighting during handling. When exposed with a document to a bright light source and placed in a special activating solution, a master image is formed which is composed of soft photogelatin containing a dark dye. When the master image is placed in contact with a sheet of plain white paper, a very thin layer of the dyed gelatin is transferred to the print paper. The positive copy of

the original document is then ready for use. Advantages claimed for the system include: a positive image is produced; multiple copies on ordinary paper are possible from one piece of photographic material; the system is inexpensive, quick and simple to operate, and the handling properties of the reproduction are the same as those of ordinary paper.

A NEW SYSTEM OF REGISTER CONTROL. *Paper and Print* 25, No. 3, Autumn, 1952, pages 330 and 353 (2 pages). This system uses a series of micro switches connected with pilot lights or a buzzer. If a sheet is out of register, the light or buzzer fails to operate and the pressure is tripped off. The pressman can then intercept it and return it to the feeder. Creased sheets are also intercepted.

PROGRESS IN PRESSURELESS PRINTING. Wm. C. Huebner. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 31-6 (6 pages). Electric attraction across a paper to plate gap of .001 inch transfers ink in a completely workable manner without pressure or wear. The principle of this Electronographic Press and its plates will be explained. Experiments to eliminate inking and drying problems have made use of fine powders. Printed samples of this "Smoke Onset" method will be shown and discussed. Experiments with transparent negatives and positives to replace printing plates have used light as a driving ion force instead of electrostatic pressures. Applications of this principle to office duplicators, photo-type composition, and the endless negative belt idea to book production will be described.

• TRANSFER PROCESSES. *British Patent* 665,649. F. W. Sharp. *Photographic Abstracts* 1952, Part 3, page 160. A photographic film material which can be used as a stencil consists of a gelatin layer containing a light-sensitive ferric compound on a film base, preferably a co-polymer of vinyl chloride and vinyl acetate, which can be readily stripped from the gelatin layer after wetting and drying. The gelatin preferably contains a pigment to colour the gelatin where exposed. The light-sensitive layer is exposed through a positive or negative supported on the base, treated with an oxidizing agent such as potassium bichromate or hydrogen peroxide to tan the gelatin, and the unexposed layers removed in warm water. The image formed in the tanned gelatin is transferred by contacting with silk or such material, the base being stripped off on drying. British patents may be obtained from The Patent Office, 25 Southhampton Buildings, London, W. C. 2, England, for approximately forty cents.

PRESSURE DISTRIBUTION IN LETTERPRESS PRINTING. Lennart Pihl and Ingemar Olsson. *Printing Equipment Engineer* 83, No. 5, February, 1953, pages 47-8 and 50-1 (4 pages). The pressure distribution has been studied at the moment of printing for different printing elements at different printing conditions. The compressed area of the packing has been studied. The experiments have proved that the pressure against a printing element depends very much on its size and its distance from other printing elements. This causes the shadow areas of a halftone block to carry lower pressure per unit area than light tone values. It is therefore essential to use underlay or overlay to level out the pressure when printing halftone plates. The paper being printed influences the pressure distribution very much and this is why it is difficult to find an ideal cylinder packing. Printing from elastic forms may be a method of decreasing the time of makeready in single color letterpress printing. However, due to the well known difficulties involved in trying to use elastic materials for multicolor printing forms, this method is not recommended. Thus, to decrease the time of makeready for multicolor printing, the mechanical precision of the presses must be improved, and the height of the type character must be controlled to a constant value.

* PHOTOTHERMOGRAPHY, PRINTING SHEET AND PRINTING INK THEREFOR. *U. S. Patent 2,629,671.* Alexander Murray. *Official Gazette* 667, No. 4, February 24, 1953, pages 1006-7. 1. The method of printing onto paper which comprises (1) coating onto a flat support a uniform layer of ink which absorbs heat producing radiation and converts it to heat and which contains a coloring material and a vehicle which is an organic compound selected from the group consisting of benzophenone and methyl o-benzoylbenzoate, said ink containing no material other than said vehicle melting within 20° C. of the melting point of the vehicle and which ink both in its solid state below the melting point and its liquid state immediately above the melting point is stable and does not adversely affect paper, (2) bringing the support and ink layer to a uniform temperature below and within 20 degrees centrigrade of the melting point of the vehicle, (3) illuminating all at one time an area of said layer with heat producing radiation by projecting said radiation onto said area through a negative sheet which has radiation transparent and radiation opaque areas, said radiation being of sufficient intensity and projected for a sufficient time to raise the temperature of the ink at the radiated areas above the melting point without melting the ink at the non-radiated areas, (4) allowing the melted areas of ink to fuse to a sheet of paper, forming a positive print and (5) physically removing the unmelted areas only of the ink.

* FLUORESCENT PRINTING. *U. S. Patent 2,629,956.* Joseph L. Switzer. *Official Gazette* 668, No. 1, March 3, 1953, page 84. 1. The method of decorating articles comprising the steps of applying to the surface of an article a medium comprising a soluble fluorescent dye dispersed in a carrier containing a non-volatile constituent, the concentration of said dye with respect to said constituent being greater than the concentration for maximum fluorescence of said dye in said constituent, applying a developing composition over said medium to diffuse said dye into said developing composition said developing composition comprising a relatively liquid translucent resinous composition into which said dye will diffuse and containing a resin of the class consisting of amide-aldehyde, glycol-phthalate, and cellulose ester resins and arresting the diffusion of said dye in said developing composition by converting said relatively liquid composition into a relatively solid translucent resinous film coated on the surface of the article, said developing composition having been applied in a thickness sufficient to dilute the dye diffused therein to a concentration of dye in said developing composition which is not substantially greater than the concentration for maximum fluorescence and said composition thus develops a fluorescent decoration in a film adhered to the surface of the article.

* PRINTING-MACHINES. *British Patent 635,747.* The Meyercord Company. *Abridgement of Specifications* XVI, Page 159. Printed sheets such as transfers for pottery are treated as delivered from a printing-machine 10 with vapours of sulphur di-chloride in a chamber C to which the sheets are fed by means of conveyor belts. The sulphur di-chloride is vaporized in a carburetor 40 connected to a manifold 41 fitted with sprayers, and the chamber C is connected by an exhaust conduit to a scrubber for removing the unused chloride. The printed sheet is finally treated with air blasts and stacked by a conveyer. The transfer is printed by inks which are hardened under the action of the chloride such as one containing a fatty oil, and the rate of travel of the sheets is controlled to ensure complete hardening of the printed impression by the time it reaches the delivery stack. British patents can be secured from the Patent Office, 25, Southhampton Buildings, London, W. C. 2, England, for 36 cents.

RESEARCH AND DEVELOPMENT

INK PLANT OBSERVER. I. M. Bernstein. *American Ink Maker* 30, No. 11, November, 1952, pages 49 and 69 (2 pages). The author discusses papers presented at the First International Conference of Printing Research Institutes dealing with administrative and financial set-up of European graphic arts research organizations. A review of the technical papers presented will appear in a future issue. Mention is made of the disassociation of the institutes from academic institutions, their internal structure, their centralization of research activity and their partial financing by government. Contrast is made with U.S. organizations which are to a large degree connected with universities and are specialized with separate organizations for separate phases of the graphic arts. The author is optimistic about the contribution these organizations are making.

RESULTS OF RESEARCH ON RUNNING PAPER WEBS THROUGH PRINTING PRESSES. H. L. McWhorter. *TAGA Proceedings*, 4th Annual Meeting, 1952, pages 71-79 (9 pages). Paper rolls must be wound at high web tensions at the mills so that the rolls can be shipped without telescoping. Web tensions normally desired on printing presses are appreciably lower; giving a factor of safety over proven paper strength of the order of ten. Therefore, defects in paper are not a primary cause of web breaks; breaks in a rubbing web are due to abuse. Breaks occurring at defects in the web are exactly similar to a chain that breaks at its weakest link. It is a general belief in the industry that web weave (indeterminate side-lay position of the web) is due to variations in the paper. Drastic localized variations in the paper induced by water mist spray show in laboratory tests to be incapable of producing web side-lay by themselves. Investigation showed that web breaks and web weave are caused primarily by misalignment in the machine, due to causes not previously considered. Scale models are available for demonstration. New features now being introduced in press design will make web breaks and web weave very rare; reducing spoilage and production costs, while improving quality.

SOME NEWER INVESTIGATIONS OF PIGMENT PAPER. *Grafiska Forskningslaboratoriet* 31, January, 1953, pages 51-56 (6 pages) (in Swedish). In the photogravure process the pigment paper printing is a step which is very difficult to control as many different variables influence the sensitivity and graduation of the pigment paper. A review is given of what is known about the influence on the sensitivity and gradation of the pigment paper of the following items, viz., the age and moisture content of the pigment paper, the bichromate concentration, temperature and pH of the sensitizing solution, the time interval between sensitizing and printing, the R.H. during this time and the time between printing and developing.

TESTING AND MEASUREMENT

*STATIC CHARGE TESTER. Baldwin Instrument Company, Ltd. *World's Paper Trade Rev.* 137, No. 22, May 29, 1952, page 1620. The Baldwin-Dunlop Statigun, a portable instrument for measuring electrostatic charges in general laboratory and workship use is described. Some mills making the base paper for photographic coatings use the instrument for checking electrostatic charges which cause dirt to collect. 1 illustration. *Bulletin of the Institute of Paper Chemistry* 22, No. 12, August, 1952, page 944. World's Paper Trade Review is published by Stonhill and Gillis, Ltd., 329, High Holborn, London, W. C. 1, England.

*METHOD AND APPARATUS FOR MEASURING AND VARYING THE COLOR QUALITY OF LIGHT. *U. S. Patent 2,598,783.* Virgil O. Gittus. *Official Gazette* 659, No. 1, June 3, 1952, Page

93. 6. In a device of the character described, in combination, a pair of photocells, means to apply a quantity of multicolored light to one of said cells to set up an electric response, means to apply a component of a second quantity of said light to said second cell whereby a second electric response may be set up, said second light quantity being in predetermined ratio to said first quantity, a meter electrically connected to both said cells to indicate the difference of said electric responses, and means to apply a color compensating filter to both said light quantities whereby said electric responses may be equalized.

• COLOR MATCHING APPARATUS. *U. S. Patent 2,602,368.* Norman F. Barnes. *Official Gazette* 660, No. 2, July 8, 1952, Pages 326-7. 1. In combination a photoelectric device arranged to receive light reflected from an object, means for illuminating said object with light including a group of adjacent wave lengths, means for selectively limiting the illuminating light to a substantially single wave length of said group and for periodically varying the selection of wave lengths by said limiting means through a predetermined range, means operating synchronously with said wave length selecting means and controlled by the output of said photoelectric device for producing a first curve representing the energy reflected by said object at the various wave lengths, and means including a fundamental and harmonic frequency generating and integrating network for producing a second curve similar to said first curve, said last means including means for indicating the relative amounts of fundamental and harmonic frequency components in said second curve.

TONE AND COLOR

THE DILEMMA OF COLOR CONTROL. John E. Tyler. *Interchemical Review* 11, No. 1, Spring, 1952, Pages 3-12 (10 pages). A general discussion of the use of colorimeters and spectrophotometers for color control in the printing industry. The problems encountered in their application as well as the need establishing tolerances are given.

• THE LANGUAGE OF COLOR. D. L. MacAdam. *Standardization* 23, June, 1952, pages 177 and 190. The multiplicity of inconsistent names and conflicting definitions concerning color is described. The history of efforts to standardize color nomenclature culminating in an American Standard Z58.1.2, just issued, is reviewed. The most important terms and distinctions embodied in that standard are briefly discussed, and the advantages to all parties if agreement on those terms and definitions is reached are emphasized. *Kodak Research Labs Monthly Abstract Bulletin* 38, No. 8, August, 1952, page 431. Standardization is published by American Standards Association, Inc., 70 E. 45th Street, New York 17, N. Y.

BASIC COLORIMETRY AND ITS APPLICATION TO COLOR REPRODUCTION. Daniel Smith. *Modern Lithography* 20, No. 11, November, 1952, pages 71-2 and 77 (3 pages). A brief resume of basic colorimetry and the application of tri-stimulus values in color matching between original and its reproduction.

CANCO'S LITHO COLOR CONTROL. *National Lithographer* 60, No. 3, March, 1953, page 48. A description of the color control system developed by American Can Company. For routine factory control reflectometer readings of the ink are maintained within maximum and minimum values established by laboratory tests.

COLOR CONTROL BY USE OF SMALL COLOR DIFFERENCES. Lawrence Rudick and George W. Ingle. *Instruments* 26, No. 3, March, 1953, pages 400-1, 432-4 (5 pages). A method described for quantitative color inspection based on readings made with a tristimulus-type electronic colorimeter provides

permanent intra-plant color standards, permits rapid qualitative analysis of off-color samples, predicts color trends in production, and plots color data and color-tolerances in a universally recognized color space which accounts for both process capability and customer acceptability.

* USE OF A SCREEN EXPOSURE TO OBTAIN A CONTINUOUS TONE ELECTROPHOTOGRAPHIC IMAGE. *U. S. Patent 2,598,732.* L. E. Walkup. *Photographic Abstracts* 33, Part 1, No. 129, 1953, page 48. Improved continuous tone rendition and improved black areas are obtained by exposing an electrophotographic plate to a screen pattern of alternate black and transparent areas either before or after the continuous tone exposure. Fine screens of 100 to 400 lines to an inch give the appearance of a continuous tone image without the contrasty appearance obtained when the screen exposure is not given. The screen pattern may be exposed to the plate in the exposure box or in the camera, in the latter case a black and white screen being used.

GENERAL PLATES

* ADVANCES IN ELECTRODEPOSITION IN THE GRAPHIC ARTS. Edward I. Peters. *Proc. Am. Electroplaters' Soc.* 37, 69-84 (1950). The preparation of letterpress, lithography, and intaglio printing plates is described. Cu, Ni, Cr, Sn, and Fe baths currently in use in the industry are given. The Proceedings are published by American Electroplaters' Society, 445 Broad Street, Newark 2, New Jersey.

* ELECTROPHOTOGRAPHIC PLATE. *U. S. Patent 2,599,542.* Chester F. Carlson. *Official Gazette* 659, No. 2, June 10, 1952, Page 365. I. An electrophotographic plate comprising a conductive backing plate having a surface characterized by a pattern of alternate projections and depressions, said surface having between 1,600 and 160,000 depressions to the square inch, and a coating of photoconductive insulating material filling said depressions and having a smooth outer face at a height not exceeding 5 mils above said projections.

* PHOTOENGRAVING EQUIPMENT. *U. S. Patent 2,600,295.* Theodore Hommel. *Official Gazette* 659, No. 2, June 10, 1952, Page 565. 12. A photoengraving machine for exposing photosensitized cylinders comprising a table-like base, a lamp assembly swingably mounted for rocking movement above the base about an axis located in upwardly spaced parallel relation to the top surface of the base, and a cylinder-supporting carriage slidably mounted on the base for movement along a path at right angles to the axis of rotation of the lamp assembly, locking means optionally connecting the carriage rigidly to the base in an operative position in which the cylinder will be supported in precise co-axial alignment with the axis of rotation of the lamp assembly.

NEW PROCESS TRANSFERS PRINTED IMAGE TO RUBBER OR PLASTIC. *Modern Lithography* 20, No. 10, October, 1952, page 89. A new ink transfer process, called Anolith, permitting 300-line halftones in color to be used on rubber or plastics has been announced by the American Anode Division of the B. F. Goodrich Co. The impression is first made on paper and then transferred to the rubber. The transferred image will last as long as the surface of the rubber because a slight curing permanently seals the impression.

NEW PRE-SENSITIZED STENCIL FILM INTRODUCED AT SCREEN PROCESS CONVENTION. J. I. Biegeleisen *Printing Magazine* 76, No. 12, December, 1952, pages 60-1 (2 pages). A brief description of the Ektagraph stencil film for use in preparing silk screen stencils. Also improved press, drying systems, and new fast dry setting inks shown by exhibitors at the annual Screen Process Convention.

* ELECTROPLATED COATINGS ON THE LIGHT METALS. Philip O'Keefe. *Materials and Methods* 35, No. 6, 1952, pages 119-30. Production and characteristics of oxide, Cu, Cd, Fe, Zn, Ni, Cr, Ag, and brass coatings on Al and Mg and their alloys are summarized. *Chemical Abstracts* 46, No. 17, September 10, 1952, Column 7905. Materials and Methods is published by Reinhold Publishing Corp., 330 W. 47th St., New York 36, New York.

* METHOD OF PRODUCING AN ELECTROPHOTOGRAPHIC PLATE. *British Patent 687,704.* Battelle Development Corporation. *Printing Abstracts* 8, 4, April, 1953, page 181. Selenium is heated to between 240 and 400° C. so that it can be sprayed and deposited without producing a continuous film of adjacent hexagonal crystals. An inert gas is heated to about the same temperature and a base plate is heated to a temperature not above the melting point of the selenium, the base plate having an electrical resistance less than that of the selenium when deposited. The selenium is sprayed as fine molten particles by means of the gas under pressure onto the base plate.

* METHOD FOR MAKING MATRICES FOR MOLDING RUBBER PRINTING BLOCKS. *U.S. Patent 2,638,845.* R. C. Perkins. *Official Gazette* 670, No. 3, May 19, 1953, page 727. 1. Method for producing a one-piece resinous matrix adapted for repeated use for molding rubber printing dies, which method comprises engraving the design which is desired to be printed, by cutting same in the surface of a pliable vulcanized rubber block, superimposing upon said design a layer of finely divided thermosetting resinous material to a depth sufficient substantially to cover the engraving forming said design after first applying upon the block a coating to separate the resin from the rubber, covering such block and the resinous material thereon with a fibrous backing layer, thereafter subjecting the resulting assembly to an elevated temperature while gradually applying heavy pressure thereto, the heat and pressure applied being sufficient to consolidate the finely divided material integrally with the backing layer into a solid thermoset matrix embodying the complement of said design, but insufficient to cause any substantial deformation or marring of the design as engraved in the pliable rubber block, and removing the resulting matrix from the rubber block.

* PHOTOMECHANICAL PRINTING SURFACES. *British Patent 664,353.* L. Wild and J. Smith. *Photographic Abstracts* 33, Part 1, No. 129, 1953, page 44. The preparation of a photomechanical printing surface is described in which the plate is contoured in variation with the printing density of the subject. The plate, of copper or zinc, is coated with a bichromated gelatin coating and covered with a diffused negative through which it is exposed and the plate developed and etched, the deepest tones of the subject being recorded. A coating of bichromated fish glue is next applied to a copper plate, albumin being used for a zinc plate, the plate covered with a halftone or line negative of the subject, and exposed, developed and etched as before. The halftone or line negative is taken using a dummy plain glass screen, the diffused negative using a crossline screen at a greater distance from the negative than in the previous case. The method may be applied to colour printing plates, a diffused and a halftone or line colour separation negative being obtained for each block.

* METHOD OF MAKING METAL SCREEN STENCILS. *U. S. Patent 2,569,752.* H. B. Fowler. *Photographic Abstracts* 33, Part 1, No. 129, 1953, page 47. A method of making metal screen stencils is described, in which a design is photographed in a resist on one surface of the screen and a multiplicity of small dots is photographed in a resist on the other surface of the screen. The screen is then etched, giving an image on one side and a pattern of apertures on the other extending into the image.

SKILLED CRAFT TEXTS

501 Lithographic Offset Press Troubles
502 Offset Platemaking (Albumin)
503 Offset Photography (Line)
504 Offset Platemaking (Deep Etch Gum Process)
505 Lithographic Offset Press Operating, Vol. I
506 Lithographic Offset Press Operating, Vol. II
507 Offset Stripping (Black and White)
508 Offset Photography (Halftone)
509 Offset Photography (Color Separation)
510 Tone and Color Correcting (Dot Etching)
511 Tone and Color Correcting (Hand Retouching)
513 Lithographic Press Technical
514 Tone and Color Correcting (Opaquing)
515 Photo-Composing

SHOP MANUALS

101 Paper and Humidity in the Pressroom
103 Albumin Platemaking
104 pH Control of Fountain Solutions
105 Inking System for the Offset Press
106 Lithographic Offset Press Blankets
107 Feeder and Delivery for Offset Presses
109 Guides, Grippers and Insertion Devices
110 Graining of Lithographic Plates
111 Offset Plates in the Pressroom
112 Offset Photography (Line)
113 Inks for Offset Lithography
114 Packing and Pressures for Presses
115 Press Cylinders for Offset Lithography
116 Offset Photography (Color Separation)
117 Hand Transfers for Offset Lithography
119 Gauges and Instruments for Offset
120 Photo-Composing for Offset Lithography
121 Tone and Color Correcting (Retouching)
122 Proving for Offset Lithography
123 Platemaking for Offset (Deep Etch)
124 Offset Photography (Halftone)
125 Paper for Offset Lithography
126 Paper Conditioning for Offset Lithography
127 Pressroom Problems
131 Plate Troubles in Offset Lithography

Publications

SPECIAL SUBJECTS TEXTS

401 Chemistry of Lithography
402 Physics for Lithographers
403 Chemistry for Lithographers, Vol. I
404 Chemistry for Lithographers, Vol. II
407 Survey of Lithography
410 Estimating (Black and White)
411 Estimating (Color)
413 Leadership Training

RESEARCH AND TECHNICAL PUBLICATIONS

211 Dot-Etching on Dry Plates and Films
212 Litho-Kleen, Improved Treatment for Blankets and Rollers
213 The Drying of Lithographic Ink
215 Sensitivity Guide
216 A Method of Designing and Making Contact Screens
217 The Standardization of Graining Procedures
301 Modern Paper Conditioning Methods and Paper Hygroscope
303 Method of Conditioning Paper for Multi-Color Offset
304 Optical Density as a Measure of Tone Value in Lithography
305 Dot Area, Dot Density, and Tone Value
306 Prevention of Occupational Dermatitis (Chrome Poisoning)
307 Curling of Lithographic Papers
308 What the Lithographer Should Know About Paper
309 Air Conditioning for Lithographers
318 The Measurement of Offset Blanket Thickness
319 Pick Tester
647 Lithographic Abstracts—1947
648 Lithographic Abstracts—1948 (out of print)
649 Lithographic Abstracts—1949 (out of print)
650 Lithographic Abstracts—1950
651 Lithographic Abstracts—1951
652 Lithographic Abstracts—1952
653 Lithographic Abstracts—1953
702 Reproduction of Tones by Offset Lithography
801 How to Make and Run Better Plates
802 Plate Surface Treatments
803 pH, What it is, How to Measure it, Where to Use it
804 How to Make and Run Deep Etch Plates on Grained Zinc
804S How to Make Deep-Etch Plates on Ungrained Zinc and Aluminum
805 How to Make and Run Better Surface Plates on Zinc
904 The Register Rule
SB1 The Paper Hygroscope